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MECHANICAL DERANGEMENTS OF THE KNEE JOINT*

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Mechanical derangements of the knee joint are relatively common and may be due to either extrinsic causes such as exostoses, or to intrinsic causes such as fractured internal semilunar cartilage. It is to the latter, which are the most difficult to diagnose, that attention will be drawn in this paper.

ANATOMY

The knee joint is a hinge joint. While nature was apparently most lax in providing bony reinforcements to the knee, she has been most ingenious in furnishing ligaments strong enough to take up the strains imposed. In front is the anterior or big patellar ligament. This has a ligamentous or tendinous attachment below and a muscular attachment above. Its action as a true ligament, therefore, is not very great. On the inner side is the internal lateral ligament, short, strong and fan shaped, with its narrow part downward, and having its deep portion intimately associated with the capsule and the internal semilunar cartilage. The deep fibers, being short, keep the internal semilunar close to the condyles of the femur. On the outer side the external lateral ligament extends from the external tuberosity of the femur to the head of the fibula, splitting the tendon of the biceps in its course. This ligament has two divisions, a weak posterior part and a strong anterior part. It is separated from the capsule of the joint by the popliteus tendon and the bursa found there. The two lateral ligaments are the chief agents in providing against lateral mobility; the internal lateral preventing the knee from bending outward, and the external lateral preventing the knee from bending inward. The rounded ends of the femur are buttressed, as it were, by the internal and external semilunar cartilages, and thus the lateral ligaments are aided in their function (Fig. 1).

The internal semilunar cartilage forms a large segment of a circle and is less movable than the external. Posteriorly it is firmly attached just in front of the posterior crucial ligament. Anteriorly it is less firmly attached in front of the anterior crucial ligament. Internally it has a firm attachment to the lateral ligament and a somewhat weak attachment to the tibia by the coronary ligament.

The external semilunar cartilage forms a smaller segment of a circle. Occasionally it is nearly a complete circle, there being only a small opening against the tibial spine, as in three of the 150 specimens examined by Tenney.[1] The external semilunar is fixed anteriorly in front of the tibial spine, and posteriorly to the tibial spine between the tubercles, giving a strong slip to the posterior crucial ligament. The attachments to the external lateral ligaments and the tibia are very weak. The semilunar bodies are spoken of as being cartilaginous. In reality, they are fibrocartilaginous, the thick convex part being largely fibrous tissue, and only the inner concave portion cartilaginous. When this cartilaginous border is injured, small pieces of cartilage may become separated and loose. The fibrous tissue is arranged transversely and longitudinally. The longitudinal fibers may continue anteriorly across to the opposite cartilage, forming the transverse ligament—an insignificant structure. At the convex borders, the transverse fibers blend with the capsule. The coronary ligaments are formed by these fibers below and are really only the portion of the capsule between the semilunars and the tibia.

The anterior and posterior crucial ligaments are two very important internal ligaments. The anterior arises from the front of the spine of the tibia near the anterior extremity of the external semilunar cartilage and courses upward, outward and backward to the inner side of the outer condyle of the femur. The posterior arises from the back of the groove on the posterior side of the top of the tibia and from its outer border, leaving the floor of the groove and the transverse piece of the spine of the tibia free and covered by synovial membrane. Here it is closely connected with the external semilunar cartilage and runs forward, upward and a little inward to the front of the outer side of the inner condyle of the femur and of the intercondylar notch (Piersol[2]). These ligaments greatly aid in the stability of the joint. Griffiths[3] states that if the internal or external lateral ligament is divided and lateral bending is attempted with the knee extended, the bending allowed is considerable, but if the same is attempted with the knee in the flexed position no bending is allowed laterally. He concludes, therefore, that inward bending of the knee joint is prevented in the extended position by the internal lateral ligament, and in the flexed position by the crucials. In flexion the relaxation of the internal lateral ligament allows some rotation. With the knee partially flexed, extension may pull on the anterior or upper part of the

* From the Mayo Clinic.

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1. Tenney, R.: The Anatomy and Surgery of the Internal Derangements of the Knee Joint, Ann. Surg., 1904, **40**, 1.
2. Piersol, G. A.: Human Anatomy, Ed. 4, Philadelphia, J. B. Lippincott Company, 1913, **1**, 404.
3. Griffiths, J.: Observations upon Injuries to the Internal Lateral Ligament and to the Internal Semilunar Cartilage of the Knee Joint, Brit. Med. Jour., 1900, **2**, 1171.

internal lateral ligament and thus make some traction directly on the internal semilunar cartilage, there being a few fibers of the quadriceps inserted there. This may explain why the anterior extremity of this cartilage occasionally becomes caught and ripped. Jones[4] says experiments show that hyperextension of the knee is prevented by (1) the posterior crucial, (2) the anterior crucial, (3) the internal lateral ligament, (4) the external lateral ligament, and that increased extension is secured as one after another of these is divided. Internal rotation is limited by the internal lateral ligament and the anterior crucial. In external rotation the tibia may slip slightly forward on the femur but is stopped by the anterior crucial. On internal rotation the tibia may slip back a little but is stopped by the posterior crucial.

Mechanical derangements produced by intrinsic causes will be considered under the following heads:

1. Semilunar cartilages.
2. Loose bodies:
   (*a*) Of intrinsic origin — chondral and osteochondral bodies.
   (*b*) Of extrinsic origin — foreign bodies.
3. Synovial fringes.
4. Crucial ligaments.

DERANGEMENTS DUE TO THE SEMILUNAR CARTILAGES

In the English medical literature there are many reports of large series of cases of damage to the semilunar cartilages, but those reported in the American literature are few. This is accounted for largely, I believe, by the fact that the English, as a class, participate much more freely in vigorous pastimes such as football, Rugby, tennis, hockey, etc., than do Americans. In America the clerk or laboring man seldom indulges in such pastimes, while in England he participates in them freely.

As stated previously, when the knee joint is partially flexed a little lateral mobility is permitted. This is due to the fact that the internal lateral ligament is relaxed. As it slacks, however, the crucial ligaments take up their duties so that when the knee is at right angles, the lateral mobility is checked. From 25 to 90 degrees' flexion is an arc of weakness, and it is in this arc that damage to the internal semilunar is most frequently inflicted. According to Jones,[5] the most frequent cause of injury to the internal meniscus is strain thrown on the internal lateral ligament when the tibia is rotated outward while the knee is flexed. In rare instances he has known it to occur when the knee was extended; but, as emphasized by Lane,[6] the internal fibrocartilage is injured in such cases only by great force. In extension, the internal lateral ligament is taut and performing its function, and it must be torn before the internal semilunar fibrocartilage can be displaced. In moderate flexion the crucials are not in a position to maintain stability, and the internal lateral ligament being slightly relaxed, some mobility of the internal semilunar is allowed. On attempted extension there may be a slight pull on the anterior extremity of the semilunar cartilage by the prolongation of the quadriceps muscle inserted into that part of the capsule, and the cartilage may be caught between the joint surfaces and torn loose or possibly fractured as the leg is straightened. Martin[7] states that damage to the internal semilunar is common among coal miners who stand with the knees more or less flexed in low seams (4 by 4½ feet) in the mines. A review of our case histories has demonstrated that in the majority of instances the accident occurred with the leg partially flexed, the foot abducted and rotated outward, and force applied which caused the tibia to be rotated outward or the femur to be rotated inward, depending on whether the force was applied above or below the plane of the knee.

Locking of the joint is followed by effusion. The pain is often so severe as to make the patient cry out and fall to the ground, grasping the knee with both hands. It is usually most severe at the primary locking, and lessens as the locking becomes more frequent, until by some patients the pain is complained of less than the mechanical obstruction blocking the extension of the leg. The effusion may be considerable following the early locking, but as the lockings become more frequent the joint seems to accustom itself to the condition, and very little if any appreciable amount is noted. In some cases the locking may not be distinct, the patient complaining only that "things do not feel right in the joint." A diagnosis of a damaged fibrocartilage should be made in such cases only after very careful examination and consideration. The roentgenogram is of practically no aid, as in the great majority of instances the fibrocartilaginous body of the misplaced cartilage casts no shadow. Occasionally in persons with a history of lockings extending over many years the irritation inflicted on a pedunculated end of the internal semilunar will so harden it that a faint shadow will show in the roentgenogram between the internal condyle of the femur and the tuberosity of the tibia. In such cases, however, the history is usually so clear that the roentgenogram is not a necessary aid in the diagnosis. Nevertheless, any patient with mechanical derangement of the knee should have the benefit of the roentgenographic examination, for it is impossible to differentiate in many cases between a misplaced or loose internal semilunar or external semilunar cartilage and a loose body. The roentgenogram, therefore, may be considered as of the greatest aid in making a differential diagnosis.

It must be constantly borne in mind that while the most frequent cause of mechanical derangement of the knee joint is an injured internal meniscus, other causes also may produce the derangement. In some instances a diagnosis is extremely difficult before operation, and even after the joint is opened the cause is not evident. Surgeons of great experience have acknowledged that occasionally after making a careful search for the condition causing the symptoms complained of, they have closed the knee joint without repairing or removing anything. The removal of the internal semilunar cartilage must be decided from the findings.

According to Lane,[6] periodic derangements of the knee joint may so lower the vitality of the joint tissues that tuberculosis develops. In his opinion the majority of cases of tuberculosis of the knee joint have this as their predisposing factor, particularly in persons who have intestinal stasis. In this contention he is supported by Jones,[4] who adds that rheumatoid

4. Jones, R.: Notes on Derangements of the Knee, Ann. Surg., 1909, **50**, 969.
5. Jones, R.: Internal Derangements of the Knee, Lancet, London, 1914, **2**, 297.
6. Lane, W. A.: Some of the Common Injuries of the Knee Joint and Their Consequences, Brit. Med. Jour., 1911, **1**, 537.
7. Martin, A. M.: Discussion on the Diagnosis and Treatment of Injuries of the Knee Joint Other than Fractures and Dislocations, Brit. Med. Jour., 1913, **2**, 1070.

arthritis also may be so induced. I have seen a few cases of tuberculosis of the knee in which there was a history of mechanical derangements for some years preceding the onset of the tuberculous arthritis. Such a history, however, was the exception rather than the rule.

The treatment of derangement due to the internal semilunar cartilage is either nonoperative or operative. It may be taken as a rule that patients should not be operated on who give a history of only one locking. If seen immediately after the accident, reduction should be made at once. Complete extension, and the statement of the patient that the joint feels right, is evidence that reduction of the displaced cartilage has been effected. If the patient insists that the reduction is not accomplished, it is probable that he is correct. After successful reduction, rest in bed should be insisted on until the effusion has subsided. Flexion of the knee and strain on the internal lateral ligament should be prevented for six weeks. If the damaged cartilage is given the opportunity to unite firmly in its normal position, the chances for a cure are very good. If the primary care has been careless and the fixation period inadequate, the patient very often presents himself with a story of multiple lockings. In these old cases, operative interference is necessary, for rest and immobilization at this late time will not insure the fixation of the loose cartilage in its normal position. When operation is necessary for removal of the internal meniscus, the incision of choice is the condylar incision of Jones. It is not necessary to remove the entire cartilage; the anterior three fifths is usually sufficient. Damage to the internal lateral ligament may be avoided by limiting the incision and by leaving a thin rim of the fibrocartilage attached to the internal lateral wall of the joint. This can be done easily by using a tenotomy knife to separate the cartilage, thus avoiding the deep fibers of the internal lateral ligament.

Fig. 1.—Intrinsic structures of the knee joint.

In my series of cases there has been none in which we have found it necessary to remove the external semilunar cartilage. Jones[4] found it necessary to remove it in twenty-four cases, 7 per cent. of his total. He explains the rarity of damage to this cartilage on the ground that, unlike the internal semilunar which is securely fastened by its ligaments and cannot slide out of the way of harm, the external semilunar is more loosely attached and thus escapes injury. However, it should be borne in mind when making a diagnosis that the external cartilage is not immune to damage.

LOOSE CHONDRAL AND OSTEOCHONDRAL BODIES

Relatively speaking, loose bodies of cartilaginous or osteocartilaginous consistency are common. They may be either free or pedunculated. Very often when the body is cast off from one of the articular surfaces a piece of spongy bone comes with it. As the body wanders about the joint it receives nourishment sufficient to permit the growth of cartilage until it is entirely covered. Then only by section of the body can the bone be demonstrated (Fig. 2).

The etiology of loose bodies is interesting. It is generally conceded that a certain definite group have osteoarthritis or Charcot's disease of the joint as their primary cause. This group, however, does not directly concern the surgical aspect of the subject, for in such cases the disease is more important than the mechanical difficulties, which are only incidental. The majority of loose bodies in the knee joint cannot be explained on these grounds, and it is this majority that is of the greatest interest. Whitelocke[8] believes that many of them have their origin in the fibrous tags that hang from the synovial membrane. He states that as the synovial membrane, articular cartilages and interarticular cartilages are developed from the same primitive embryonic intermediate layer of the axial blastema, these fibrous tags may readily develop into loose bodies of chondral nature. Koenig,[9] on the other hand, described osteochondritis dissecans as being the cause of loose bodies. Ridlon[10] and Freiberg[11] have more recently called our attention to this condition and reported cases. Briefly, it is supposed that the pathology causing osteochondritis dissecans is a blocking of one of the nutrient end-arteries supplying the joint surfaces, with a consequent desiccation of the localized devitalized area as a free or pedunculated body. Undoubtedly there are such cases. However, it is very difficult to estimate the amount of trauma that may be inflicted on a joint surface by the crushing force exerted on attempted extension of the knee by a curled or crumpled up semilunar cartilage. Owing to its fibrocartilaginous structure, the semilunar cartilage may itself escape any serious damage and yet severely injure the cartilaginous articular surface. In the

8. Whitelocke, R. H. A.: Loose Bodies in the Knee, with Special Reference to their Etiology and Growth, Brit. Jour. Surg., 1913-1914, **1**, 650.

9. Koenig, F.: Ueber freie Körper in den Gelenken, Deutsch. Ztschr. f. Chir., 1888, **27**, 90.

10. Ridlon, John: Osteochondritis Dissecans, THE JOURNAL A. M. A., Nov. 15, 1913, p. 1777.

11. Freiberg, A. H., and Wooley, P. G.: Osteochondritis Dissecans; Concerning Its Nature and Relation to Formation of Joint Mice, Am. Jour. Orthop. Surg., 1910, **8**, 477.

majority of instances no history is to be elicited of a tendency to form loose bodies, but there is a history of direct injury to the internal condyle of the femur by falling on the flexed knee. The injured area may be chipped off at the time, but more often the area of trauma is devitalized and later separates off and becomes a free body. In the greater number of our cases of loose bodies in the knee joint we were able to demonstrate either by the Roentgen ray or operation that the bodies originated from the thick ridge of the cartilage placed on the internal condyle of the femur to compensate for the wear caused by the normal action of the joint (Fig. 3).

The symptoms are catching or locking of the joint accompanied by pain and followed by swelling. Repeated attacks generally tend to decrease the severity of all the symptoms. Very often the patient is able to locate the body and thus establish the diagnosis. The Roentgen ray in practically all instances discloses the presence of the body, as the cartilage is usually dense enough to cast a shadow, and in many instances a small flake of bone is attached to the cartilage which further aids in the localization. The continued presence of these bodies in a joint causes continued irritation and is apt to produce arthritis. They should be removed, therefore, but before operation care should be taken to locate them as accurately as possible. After the preparation of the knee has been completed, it may be possible to localize the body in the suprapatellar pouch or at either side of the ligamentum patellae. By holding the body between the fingers and infiltrating the skin with local anesthesia, a sharp needle may be pushed through the skin into the body to hold it securely. A small incision down the course of the needle then allows ready removal of the body. More often, however, the body cannot be grasped in this manner and in such cases general anesthesia and an incision allowing the best approach to the body is necessary. If the body rests in the anterior compartment of the joint and on the inner side, the incision on the inner side of the patella permits the easiest entrance. When a more general exploration is necessary, the splitting of the patella as described by Corner[12] allows free inspection of the suprapatellar pouch and the anterior and interarticular areas of the joint. If the body is posterior, the incision described by Brackett and Osgood[13] through the popliteal space is the most convenient. The mere presence of a loose body in the posterior part of the joint does not demand its removal. Moreover, it should be remembered that occasionally there are sesamoid bones in the hamstrings that are extremely difficult to differentiate. A sesamoid bone may have a concave surface that fits the convex posterior surface of the condyle of the femur, whereas the loose body, because of its wandering, does not have the shape of its location impressed on it, and is often rounded or oblong. Stereoscopic roentgenograms may show whether the body casting the shadow is resting directly on the condylar surface or is located in the intercondylar notch. If in the intercondylar notch, it is presumably a loose body, but if resting on the condyle it probably is a sesamoid.

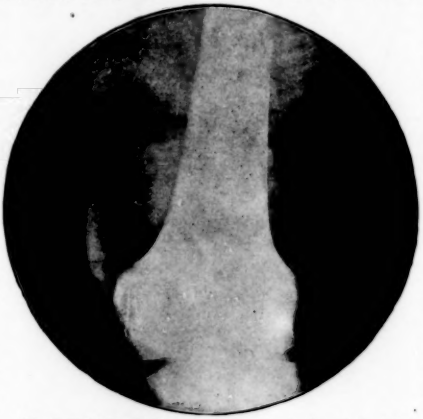

Fig. 2 (116019).—Anteroposterior view showing loose body at site of origin in internal condyle of the left femur.

FOREIGN BODIES

Foreign bodies cause derangements but differ from the previous groups mentioned in that they are of extrinsic origin, being introduced accidentally or intentionally from without. In the literature, needles are mentioned frequently as a finding. In some instances the patient is not aware of the introduction of the needle. Malingerers occasionally introduce needles in the knee joint, and the clinical picture is baffling until a roentgenogram is taken. Bullets may enter the joint and be remarkably well tolerated. The presence of a foreign body in practically all instances demands the same operative measures as mentioned for the loose cartilaginous bodies, except that the demand for its removal is even more urgent.

SYNOVIAL FRINGES

Synovial fringes or fat tags occasionally cause mechanical derangements, but the symptoms are usually mild. The condition may be due to mild tuberculosis or to some systemic disease, such as syphilis. These facts, together with the mildness of the symptoms, usually contraindicate operative interference. Such tags, as a rule, have their origin on the alar ligament or the fat pad extending on either side of the patellar ligament. Occasionally during the course of an exploration of the joint I have removed a pedunculated flattened fat tag which looked as though it were being habitually squeezed by the articular surfaces. However, that the fat tag may be the sole cause of joint derangement has not in our cases been shown to my satisfaction. Painter and Erving[14] have called attention to the possibility that fat tags may cause symptoms, and have reported cases.

THE CRUCIAL LIGAMENTS

The results of rupture of one or both of the crucial ligaments are more serious and disabling than those of what are generally understood as mechanical derangements of the knee joint. Their cause is severe trauma, such as that resulting from the passing of a wagon wheel over the leg. If after an injury with the knee in an extended position the tibia can be pushed forward,

12. Corner, E. M.: The Surgery of the Knee Joint, THE JOURNAL A. M. A., Sept. 26, 1914, p. 1069.
13. Brackett, E. G., and Osgood, R. B.: The Popliteal Incision for the Removal of "Joint Mice" in the Posterior Capsule of the Knee Joint, Boston Med. and Surg. Jour., 1911, **165**, 975.
14. Painter, C. F., and Erving, W. G.: Lipoma, Arborescens, Boston Med. and Surg. Jour., 1903, **148**, 305.

the anterior crucial is ruptured. If, with the knee in flexion, the tibia can be pushed backward, the posterior crucial is ruptured. The pain caused by such extensive manipulations usually necessitates an anesthetic. The spines of the tibia may be broken in addition, and occasionally give rise to loose bodies. For ruptured crucial ligaments, Corner has advised operative measures. However, when the knee is properly treated from the onset by placing it at rest in slight flexion in a plaster of Paris cast and maintaining such fixation for three months, a useful knee results. It is tersely stated by Jones and Smith[15] that "modern practice pays not enough attention to the fact that a ruptured tendon or ligament must not be subjected to strain during the period of healing." Use of an injured knee should be permitted only after careful examination. According to these authors, in a case of rupture of both crucials, conservative measures of rest for three to six months promise better results than immediate operation. It is astonishing to what extent, particularly in the young, a knee with relaxed ligaments will regain stability if a suitable brace is provided to prevent strain on the stretched ligaments.

END-RESULTS

The cases forming the basis of this report number eighty-seven. They were all under observation in the Mayo Clinic during the interval between Jan. 1, 1910, and Jan. 1, 1916. As many of the patients as possible have been seen or communicated with since their operation, to ascertain the end-result of the treatment accorded them. There were sixty-three males and twenty-four females. The youngest was 14 years of age, and the oldest 67. The average age was 32 years.

The internal semilunar cartilage was judged to be the sole offender and removed in fifty-three cases. We were able to trace forty-four of these patients. Thirty were cured, nine were relieved, and five reported themselves as no better. It is probable that a few of the nine reporting themselves as merely relieved may be considered cured, for in some instances their reasons for stating that they were more or less dissatisfied with the operation were indefinite. However, as the opportunity to make the examinations and observations necessary to refute their statements was lacking, they have been classified as merely relieved. The five patients reported as no better were cases in which at operation no definite pathology could be established and the semilunar was removed on insufficient pathologic evidence. In the majority of these cases it would have been better to have at least deferred operation. Five patients we were unable to trace. The internal semilunar cartilages were removed from eight knees at the same time that loose bodies were removed. In the majority the loose bodies were the prime cause of the trouble. All of these patients reported themselves as completely cured. In twenty-four instances, loose bodies were removed from the knee joint when they were considered to be the chief offenders. Sixteen patients reported themselves as cured; five were not traced, and three were relieved. The latter three cases were those of elderly people who had arthritis associated with the condition. Undoubtedly much of their present complaint is due to that.

Fig. 3 (147988).—Cross section of loose body, showing cartilage grown around the bone, × 2½.

Two cases of rupture of the crucial ligaments were treated conservatively by placing the knee slightly flexed in a plaster of Paris cast. Full function was restored.

To sum up, fifty-six of the eighty-seven patients operated on for mechanical derangements of the knee due to intrinsic causes were cured; twelve were relieved; five reported themselves as no better, and fourteen were not traced.

CONCLUSIONS

1. Damaged semilunar cartilages should be accorded the careful treatment by rest and fixation that is given an ordinary fracture of one of the long bones. Recurrent locking will then be an uncommon sequela.

2. Recurrent locking produced by a loose or fractured semilunar cartilage or loose body demands removal of the meniscus or body under the strictest asepsis. A judicial exploration of the joint should be made at the same time.

3. The condylar incision is the incision of choice for the removal of the semilunar cartilages.

4. For the removal of loose bodies, the split-patella incision is usually best.

5. A ruptured crucial ligament is better treated conservatively than by operation.

ABSTRACT OF DISCUSSION

DR. JOHN RIDLON, Chicago: I agree entirely with all that Dr. Henderson said, but I would like to say that in injuries of the knee joint in which the semilunar cartilage may have been injured, it is most important to put the leg straight in a plaster cast and keep it there until all symptoms have been absent for a long time. If symptoms return without there having been an accident, it is necessary to go into the joint, unless some reason otherwise is shown. I think that we are going to find a lot more cases of osteochondritis dissecans than heretofore. When I published my paper I reported three cases. Before that Dr. Freiberg's case was the first, and I think the only one in this country; and my three were the next. The cases are not common. Dr. Henderson has been able to show a number, probably because he knew what to look for. We have had an unusual case since the publication of my paper. A young woman presented the typical Roentgen-ray pictures of osteochondritis dissecans in both knees. On opening the right knee we found the cartilage of the inner condyle blistered up, but no loose body. In the left knee we found the cartilage in the same condition and a loose body, biscuit-shaped, 1¼ inch in circumference and one-fourth inch thick. This was removed. A year later the Roentgen-ray pictures showed a loose body in the right knee, another spot of osteochondritis dissecans in the left knee and another loose body in that joint.

DR. J. P. LORD, Omaha: About twelve or fifteen years ago Dr. W. J. Mayo called attention to the advantages of a transverse incision of the knee for extreme infections of the knee joint. Having had experience in opening the knee thus freely with very desirable results, and regarding it as not of serious consequence, I used this method of exposure in one case with highly gratifying results in which the patellar tendon was divided and the knee joint widely opened, which enabled me with great facility to remove the foreign bodies.

15. Jones, R., and Smith, S. A.: On Rupture of the Crucial Ligaments of the Knee, and on Fractures of the Spine of the Tibia, Brit. Jour. Surg., 1913-1914, **1**, 70.

They were very large and eight in number, one being nearly 2 inches in extent, and of a mulberry type. Part of these bodies were well behind the condyles, and it had seemed to me that no other incision would have been adequate to have made an assured success of their removal without, perhaps, more exposure and damage than there was in the very radical procedure of opening the joint in the manner described. I do not pretend to say that this is very often indicated.

DR. W. C. CAMPBELL, Memphis, Tenn.: Dr. Henderson stated that he has not removed a single external cartilage during all the series. A few days before I left I removed the external cartilage from a man who gave a very interesting history. He had three days previously a sudden locking of the knee, which had caught at a greater angle than I had ever seen. It was fixed and held at a right angle. Six or eight years before, he had had a number of attacks, and then, without treatment, they had stopped, and he has had no trouble for three years. He had always before been able to straighten the knee after a few hours. This time, however, he was unable to do so. He was brought to me with the knee flexed at about a right angle and fixed in that position. I insisted on taking him to the hospital and doing an operation to get the leg down, if he could not reduce it otherwise. He refused treatment or operation, so he went home and stayed there ten days. Then he came back with no improvement in his condition. There was practically no effusion in the joint when the joint was opened. The knee was freely movable in flexion beyond the point of locking. On operation, I found that the external cartilage was so long that it was folded on itself in the joint. I removed it by the usual external incision.

DR. ROBERT B. OSGOOD, Boston: I agree in the main with Dr. Henderson, but I think that it is a mistake to consider this semilunar cartilage problem a simple one or to be dogmatic about the operation. I understood him to say that we should take three fifths of the cartilage away. I am not sure that that dictum is wise, because I have seen certain cases in which perhaps three fifths have been removed, and in which the symptoms of slipping did not return; but the symptoms of riding up over the end of the cartilage left did occur, and seemed to be overcome by an operation which secondarily removed the posterior portion of the cartilage. More than that, cartilages are often found, in my experience, not simply detached in their anterior portion, but sometimes quite extensively detached along their whole border. The flopping inward and outward gives rise to the symptoms. It would be, in such cases, obviously unwise to remove simply the anterior portion. They are sometimes split longitudinally as if cut with a knife from one end to the other. I have found this a number of times, the internal, or joint, side being free, and the other side attached to the coronary ligament. It would obviously be unwise to remove simply the anterior two thirds in such a case as that. These are problems which demand an exposure of the whole site and the condylar incision, which Dr. Henderson advises is the best. I take him to mean an incision that is longitudinal in its upper portion and then sweeps backward at the level of the joint line. At the Massachusetts General Hospital clinic during the last year we have had two cases of external cartilage, as well as internal.

DR. EDWIN W. RYERSON, Chicago: Dr. Osgood's point about the removal of the whole cartilage is excellent. If you are going to remove any, why not take out the whole thing? The operation is easier with the leg flexed at a right angle on the edge of the table. Then the leg can be rotated around, so as to reach the posterior end of the cartilage. The anterior end can always be removed easily. The other end can be snipped off with a pair of strong curved scissors. Loose bodies are sometimes extremely annoying. If you get into the joint without having first transfixed the loose body, you sometimes cannot find it even with a wide opening. It is possible to take it out under local anesthesia in most cases. In one case in which I was operating under a local anesthetic I could not find the loose body, which was as large as the end of the thumb. The man said, "I can find it for you"; so we put a pair of sterile rubber gloves on his hands, and in a minute he squeezed out the loose body, which flew on to the floor. Another point about the transverse incision is useful. Do not make too long an internal incision. I saw an incision 7 inches long made by a surgeon in Chicago. It is only necessary to make a short incision, the perpendicular part being an inch and a half long, and the transverse part about 2 inches, as described by Robert Jones. I want to report another case of external similunar cartilage fracture caused by a man being struck by the lower step of a train. It made a great deal of trouble for the patient until the cartilage was removed.

DR. J. T. WATKINS, San Francisco: I understood Dr. Henderson to say that he would not operate when the rupture of a semilunar cartilage occurred the first time. I think it would be right to qualify that statement according to the occupation of the individual. For instance, twice during the last year, once in a painter and once in a carpenter, I had to attack the semilunar immediately. I felt that I could not send the man up on a scaffolding with the knee in that condition, because a recurrence might mean his death by a fall. Mr. Jones, in his classical monograph, warns us that we may find all the symptoms at the inner or the outer side of the point only to find at operation that the other was the one involved. I had that experience last winter. I went in and found that the semilunar on the side where the patient gave all the classical symptoms was as good as any one's, and then discovered that the cartilage of the other side was the torn one.

DR. MELVIN S. HENDERSON, Rochester, Minn.: Dr. Lord mentioned the transverse incision. I have not used it except in resections of the joints, but see no reason why with proper care, avoiding the lateral ligaments, it should not be used in cases such as Dr. Lord speaks of. Dr. Campbell has mentioned the damage to the external semilunar cartilage. To me this is very interesting because in our series we have not had such a case. It may be that we have overlooked the condition in some of our cases. Dr. Osgood's criticism is a just one—in the part of the paper I have read I have not mentioned much about the internal semilunar cartilage as I found it necessary to reduce the paper in order to read it in the allotted time. Some of the points mentioned by Dr. Osgood have been taken up in the fore part of the paper. I believe that the removal of the anterior three fifths of the semilunar cartilage in the majority of cases is sufficient. Of course, if the fracture is further back it must be removed back of the fracture. One reason for advocating this is that a larger incision is necessary to remove the entire cartilage, and in using the larger incision one is apt to damage the internal lateral ligaments and it is best to avoid this as much as possible. Dr. Watkins mentioned not operating the first time the derangement occurred. If the reduction cannot be accomplished otherwise, of course, operation is necessary. Such a case was that mentioned by Dr. Campbell in which he was unable to reduce the dislocation and found it necessary to remove the external semilunar cartilage in order to straighten the leg.

Food Values and Appetite.—Not all food materials are valuable in proportion to the appeal which they make to the appetite. For example, the flavor substances in foods which stimulate the olfactory and gustatory nerves, and thus give rise to appetite, are not ordinarily the substances on which the body depends for its fuel, nor for the great bulk of its building materials. The latter materials—proteins, fats or oils, and carbohydrates—when chemically pure, have little or no taste or smell. The preference for thin and crisp rather than greasy bacon is an illustration. In a recent experiment it was found that of the 129 calories which represented the fuel value of a very thin 20 gm. (three-fourths ounce) slice, only nine calories remained when the slice was sent to the table; 120 calories being represented by the fat which "fried out" into the pan. In this case a considerable amount of flavor body also goes into the fat, yet most persons would not consider eating it unless it has been skilfully blended with large quantities of other foods; whereas the scrap of skeleton tissue which has lost 93 per cent. of its food value is a dainty morsel.—Minna C. Denton, *Scientific Monthly*, December, 1916.

RESULTS OF RESEARCH ON CONDITIONS AFFECTING* POSTURE*

HENRY LING TAYLOR, M.D.
NEW YORK

Much has been said and well said on the importance for health and efficiency of straight standing and sitting, and on the deleterious effect on posture of weakness, poor health, overwork and certain types of physique.

Fig. 1.—The Mosher-Lesley schematograph.

The effect of extrinsic conditions, such as clothing, furniture and certain features of family, school and industrial life on habitual posture, are also important. In order to study such matters more closely and to improve personal and environmental conditions affecting posture, the American Posture League was organized three years ago by a group of physicians and educators, and this paper aims to present some of the results of work done by its technical committees, or officially approved by them.

Broadly speaking, a good basic standing posture is one in which the different segments of the body, head, neck, chest, lower trunk and legs are balanced nearly vertically on each other like a column with its base, shaft and capital.

The posture of the standing figure may be tested in side view by comparison with a vertical line passing through the ear. In order to illustrate good posture and contrast it with a relaxed and with an exaggerated posture, the league has issued two wall charts of a girl and boy, respectively, illustrating the three attitudes in side view. These charts have been widely used in class rooms, physicians' offices and families, and have proved their practical value.

A new method of recording posture is furnished by the Mosher-Lesley schematograph, a camera-like apparatus which reflects the figure much reduced in size on a horiztontal glass plate over which a sheet of tracing paper is stretched. On this the outlines of the figure may be traced in front, side and rear views, if desired, and preserved for record or comparison with subsequent tracings. The outline of the figure may also be traced in other postures.

The effect of various postures on the position of the internal organs, especially the stomach and colon, has been studied fluoroscopically by one of the league's technical committees, which reported that in normal subjects standing, the fatigue posture, and also the lordosis posture lowered the abdominal organs; the erect posture invariably raised the organs from 1 to 3 inches. Breathing with chest up, especially with contraction of the abdominal muscles, raised the organs 1 to 5 or 6 inches. Ordinary deep breathing had little effect on the organs. The recumbent posture usually elevated the organs from 1 to 4 inches.

The conclusions of the league's technical committee on shoes are of general interest, and it seems to us of great importance. A preliminary investigation failed to show any exact anatomic basis for the prevailing shapes of lasts, and it was decided that a study to determine whether average feet were of one or several types was necessary before the subject of shoes could be intelligently attacked. It was also seen that the ground plan of the foot should be a determining factor in the ground plan of the shoe. A call was sent out to the membership of the league for tracings of average feet, with other data, and 1,422 answers were received from various parts of the United States, India and China. In order to determine the relation of the front of the foot tracing to the heel, the more stable part, the tracing of the heel was bisected longitudinally and the axis thus found was prolonged to the front of the foot. In order to do this conveniently, a simple instrument called a foot meter was devised. This consists of a piece of transparent celluloid, 7 by 13½ inches, on which a central line is drawn, with parallel lines at equal distances on either side giving the distance in quarter inches from the central line. This central line is so applied to a foot outline as to bisect the heel, when the distances of the outline at the ball from this axis on the outer and inner side may be read off from the foot meter.

Studied in this way, the foot tracings were divisible into three types: (1) those in which the heel axis prolonged forward divided the ball equally to within less than a quarter of an inch; these were called straight feet. In other tracings (2) the larger part of the foot at its widest part fell to the outer side of this axis; these were called outflared feet. In still a third class of tracings (3) the larger distance from the heel axis lay to the inner side; these were called inflared feet.

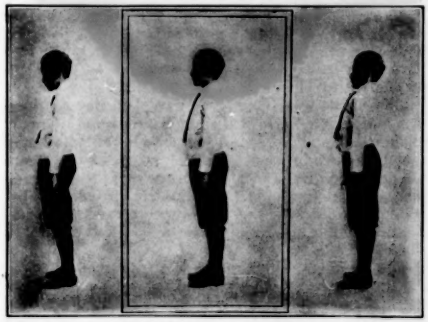

Fig. 2.—Standing postures.

In 1,131 tracings of American adults, dropping fractions, the following percentages were shown: straight feet, 30 per cent.; inflared feet, 14 per cent.; outflared feet, 56 per cent. The percentage did not greatly differ in men and women. We have nearly a hundred tracings of American children under 11, but are collecting more, especially of the younger ages, for special study.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

One hundred and seventy tracings of the feet of Oriental adults from China and India, many of whom have never worn shoes, showed the three types of straight, outflared and inflared feet as in shoe-wearing Americans, though the percentages of the three classes are different. Leaving out fractions, the 170 were

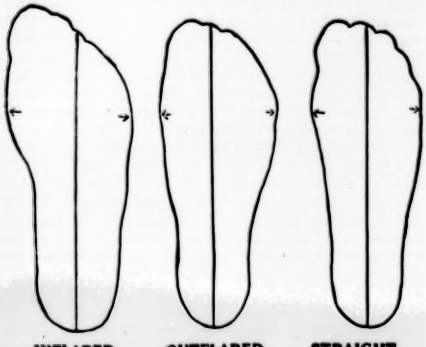

Fig. 3.—The three types of feet established by studies of the American Posture League.

divided as follows: straight feet, 36 per cent.; inflared feet, 38 per cent.; outflared feet, 26 per cent.

A further study of these tracings, especially as to the effects of barefootedness and laborious occupations on the type, is now in progress. Since the ground plan of the foot may be straight, inflared, or outflared, it follows that no one type of shoe will fit all feet. Shoes are now being constructed over lasts of the three types, designed by a technical committee of the American Posture League, and will soon be on the market. These shoes not only have been designed with reference to the anatomy of the foot, but also have been made as light and attractive as was compatible with their intended use.

Other technical committees have laid down principles and effected reforms in the construction of ready made coats, and in garment suspension. It was found that many ready made coats for men and boys were too narrow in front and too loose behind because made over a round-back model. Such coats virtually compel poor posture. This was taken up with a large manufacturer, and the coats were remodeled to proper shape.

The weight of garments should be suspended from the shoulders near the neck, and from the pelvis above the hips; the shoulder tips and waist should not bear the weight of clothing. Waists and garters have been designed on these principles.

The Furniture Committee, having no apposite anatomic data, sent out a questionnaire to members on certain measurements of the adult clothed figure, and based its work on chairs and seats on a study of these measurements and other experimental data. In hygienic seating the feet, thighs, pelvis and spine are comfortably supported in proper relation to each other. Pressure on the popliteal region, and outer part of the scapulae and shoulders is avoided. Support to the back is given mainly in the upper sacral region, and lower half of the dorsal region. The chair floor is shaped to distribute pressure, and to prevent the pelvis sliding forward. A large space is provided at the lower part of the chair back, so that the buttocks may not be pushed forward. The chair back should be flat from side to side, or only slightly hollowed, so that the shoulders and scapulae may not be pushed forward. The slope of the back and other features vary with the use for which the seat is designed, the back being more reclined in chairs designed for resting.

Seats have been worked out for the new subway cars of the Brooklyn Rapid Transit Company and are now in use. A standard movable school chair and desk have been remodeled and have given great satisfaction in use. Kindergarten and vocational chairs have been designed, and several models of office chairs have been remodeled on scientific lines. A child's seat for baby-carriage and automobile has been designed from anatomic measurements.

Reading, writing and drawing on a flat surface exert a pernicious influence on posture and often produce eye strain. When the book or drawing board is held at a moderate slope from the vertical, the easel position, the posture is improved and eye strain relieved. An adjustable book rest has been devised, which holds the book or drawing board at the angle of choice and at the proper height.

A design for a sloped library table for reading has just been sent in for the league's inspection. Such tables have been in successful use in the children's department of the Cleveland Public Library.

Much information and material tending to greater comfort and convenience and the betterment of posture conditions are being continually presented for the consideration of the league, which acts as a clearing house for all such matters. Material officially approved bears the league's label.

Fig. 4.—Anatomic subway car seat.

The foregoing is a very brief summary of a few of the things actually accomplished by the different technical committees, and the interest and scope of the work are constantly increasing.

The scientific standardizing of wearing apparel, furniture and the various appliances used by the worker makes a special appeal to the orthopedic surgeon, but

Fig. 5.—The rest right waist.

should also interest the practicing physician and the general public.

The league's scientific exhibit at this meeting shows the scope and quality of the work already done better than any description. The cooperation of all in this work whose benefits are shared by all is cordially invited.

125 West Fifty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. JOEL E. GOLDTHWAIT, Boston: To mold the human body is important if we are to develop the best efficiency of the individual. If we allow the increasing number of slender individuals to grow up as they are, we shall have an increasing number of men and women to stand as the figure that Dr. Taylor showed. You can see hundreds of them. No one needs to be a physician to glance at such a figure and know that it is not a healthy body and not an efficient creature. If we are to treat these people we must appreciate the different anatomic forms that make it possible for one person to have one type of back, and another person another; and we must try to find out the cause of the difficulty from which each suffers. If we think of our patients in that way we can do much to help them. We can visit factories where people are employed; we can show them how to arrange things better. Not only should we see that proper seats are provided, but we should also see that the people using them understand how to adjust them properly themselves. Then there would be less backache and pulmonary disease, which must come primarily from the fact that the body is so used that the parts cannot work without strain.

DR. MALCOLM C. ROSE, New York: For a number of years, I have taken the simple precaution of asking people to take two minutes' exercise night and morning in their bedroom, without clothing. The object of not having clothing on is to give freedom of movement and that they may see how they are holding their body. Tell them to put their knees back; it will bring out the center of the chest; tell them to take two minutes' exercise in the room, and they will tell you within a short time how they have improved in general feeling the way they carry themselves.

DR. ELIZA M. MOSHER, Brooklyn, N. Y.: The relation of habits of posture to health is much more intimate than is usually supposed. Two bad habits of posture are the "sidewise slouch" and the "heel postures." We all recognize the importance of free rib movement, especially that which maintains a constant interchange of gases at the apexes of the lungs. The fact has been established that tuberculosis usually begins at the apex of the lung in which from any cause there is lowered movement of tidal air during the daily activities of life. The "sidewise slouch" posture can easily be shown to be one that mechanically limits rib movement on one side of the chest, especially in its upper part. It happens in this wise: the lax everted leg, instead of a support, becomes a weight which drags the pelvis down; lowering of the hip on one side means a proportional elevation of the opposite hip. This change in the pedestal of the trunk would unbalance the body if other weights were not moved over to enable it to regain its equilibrium. The weights moved are the shoulder and arm of the opposite side and generally the head. In doing this the spine assumes a long lateral curve with its convexity toward the high hip and low shoulder. These changes in the shape of the bony skeleton necessarily cause approximation of the ribs on the side of the supporting leg—which is almost invariably the right, and separates the ribs on the side of the low hip and elevated shoulder. With ribs thus posturally separated the inspiratory muscles are helpless (to raise them) as also are the muscles of expiration to draw them down. Hence the movement of tidal air is inhibited more or less completely. In an examination of a large number of tuberculous patients I have almost invariably found the "slouch" habit of posture present and the disease beginning on the side of the low hip and high shoulder. While the so-called "heel posture" produces round shoulders and flat chest it does not greatly interfere with the movement of air in the chest. Its malign influence is exerted on the abdomen and its contents. The shutting down of the ribs on the upper abdomen shortens the distance between sternum and pubis, thus lessening the activity of the abdominal muscles and crowding the viscera downward. This usually produces enteroptosis sooner or later with the setting free of its fateful brood to injure the body in all its parts. The American Posture League bespeaks the cooperation of all physicians in its efforts to correct and standardize the things in our environment that tend to produce incorrect habits of posture and to measurably improve public health thereby.

Fig. 6.—Anatomic kindergarten chair.

DR. E. S. EVERHARD, Dayton, Ohio: What constitutes correct posture has been largely a matter of individual opinion. Each orthopedic surgeon, each director of physical culture and each general practitioner interested in it has his own idea. In the correct posture a line through the head and neck in front of the ear is vertical; one from the middle of the shoulder down through the trunk is vertical;

and one from the middle of the trunk through the legs is vertical. This is known as the vertical line test for posture. It is valuable because it gives a standard. There are three types of feet, the "inflared," the "outflared" and the straight. If we put an "inflared" foot into an "outflared" shoe, we cannot expect good results.

DR. ROLAND MEISENBACH, Buffalo: To establish the correct posture is by no means a simple problem. The work of establishing correct attitude, as Dr. Taylor is doing, is certainly commendable. Faulty attitude, like ptosis, cannot be corrected dogmatically. There are several reasons for this. In the first place, the variation in the anatomy of individuals must be taken into consideration; also the frequent occurrence of disease, as, for instance, rickets, especially in children, must be considered; likewise the flat back and the lordotic back. In regard to the sitting posture, I believe the time will come when we will have to conform our chairs to the individual rather than the individual to the chair. This is especially true in schools, and in special schools.

DR. S. A. KNOPF, New York: People who are subject to tuberculosis should not only be taught how to walk straight but how to breathe properly and deeply. I should like to see children enabled to sit comfortably, particularly in schools, on properly adjusted seats and at desks of the right height, and above all, they should not be obliged to sit quietly without moving for too long a time. It is an awful task for a youngster to sit for three quarters of an hour without wriggling. It is very sad to see so many children become subject to tuberculosis who have no tendency either by heredity or by reason of early infection, but because they have been confined altogether too long in badly aired and often overheated schoolrooms, and obliged to sit in an unnatural posture and with but a few minutes' recess and often only in a dusty indoor playroom. Let it be understood that no matter how good the posture, if it is maintained too long without change and the air is not fresh, good, and pure, it cannot be productive of good. To still further develop good, sound lungs and increase the vigor of the children, I would like to see singing, recitation, botany and geology taught out of doors as much as possible. I firmly believe that in this way you can do much to diminish tuberculosis in childhood. A recent study on the period of life at which infection from tuberculosis takes place most frequently has convinced me more than ever that if we wish to combat tuberculosis successfully we must begin to prevent and cure it during childhood. If we do this at the right time, at the right place, and in the proper manner, we cannot fail to be successful.

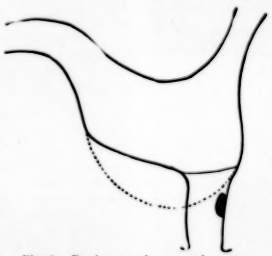

Fig. 1.—Pawlow pouch arranged to secure maximum drainage of gastric juice.

DR. HENRY LING TAYLOR, New York: This is merely one aspect of the great movement for better hygiene. I am quite in sympathy with what Dr. Knopf said. School hygiene and industrial hygiene are both in great need of reformation, but we cannot expect, by simply giving an employee a good chair, to effect a hygienic reformation in him, when he is, perhaps, underfed and underpaid.

Appendicitis in Prussia.—The *Medizinische Klinik* gives the statistics in regard to *Blinddarmerkrankungen* in Prussia during 1913. While in 1912 there were 1,888 deaths from *Blinddarmentzündungen* in the various medical institutions, in 1913 the number was 2,185. Operative treatment was applied in 63.99 per cent. and 5.11 per cent. of the patients died. The mortality was only 3.47 per cent. among the women, and 5.61 per cent. among the men, but the mortality in the operative cases was 6.69 per cent. among the men and 3.86 per cent. of the women. About 56 per cent. of all the cases occurred in persons between the ages of 15 and 30. The mortality was highest in the elderly; 130 died of the 390 elderly patients given operative treatment, out of a total of 664 elderly patients.

CONTRIBUTIONS TO THE PHYSIOLOGY OF THE STOMACH

XXXVIII. GASTRIC JUICE IN DUODENAL AND GASTRIC ULCERS *

LESTER R. DRAGSTEDT, M.S.
CHICAGO

The present work was undertaken to learn the effect of gastric juice on the rate of healing of acute gastric and duodenal ulcers. It is well known that lesions of the gastric and duodenal mucosa heal readily in the presence of active gastric juice. Small abrasions of the stomach mucosa, such as those following at times the administration of a stomach tube, are common, occasion no discomfort to the individual, and in a majority of cases heal without further sequelae. Surgical operations in which there is a maximum insult to the mucosa cells are not commonly followed by untoward effects due to the digestive activity of the gastric juice.

Nevertheless, up to the present, the medical and surgical treatment of gastric and duodenal ulcers has been based essentially on the theory that the gastric juice induces chronicity of these ulcers by digesting the exposed edges of the mucosa. This is a point of great practical as well as of theoretical importance. If pepsin—hydrochloric acid—has so great a digestive action on the injured mucosa that it maintains ulcers for months and even years, this fact ought to be readily demonstrated in well controlled laboratory experiments, where one can eliminate most, if not all, of the undetermined factors that unfortunately complicate results on patients.

The clinical and experimental literature with reference to the rôle of gastric juice in the healing of ulcers is vast and conflicting. Sippy[1] states that under medical treatment consisting of rest in bed and the feeding of alkalies and highly nutritious foods at frequent intervals, the healing of gastric and duodenal ulcers is markedly accelerated. Here it is not evident that the neutralization of the gastric juice is the important factor, as, according to some authorities (Osler[2]), a treatment consisting solely of rest in bed and easily digested foods gives favorable results. Inaccurate diagnosis is at least one important factor in explaining the apparent cures of gastric and duodenal ulcers under medical treatment. In 264 cases of gastric ulcer operatively demonstrated at the Mayo Clinic, 1913-1914, there was an error in the primary diagnosis in 33 per cent. There was an equally high percentage of error in 814 cases of duodenal ulcer.[3] These cases were severe enough to indicate surgical intervention, and in such cases the diagnosis is more accurate than in the less severe forms.

The good results, reported after gastro-enterostomy for pyloric duodenal ulcers, must be carefully scru-

* From the Hull Physiological Laboratory of the University of Chicago.

1. Sippy, B. W.: Gastric and Duodenal Ulcer, THE JOURNAL A. M. A., May 15, 1915, p. 1625.
2. Osler: The Principles and Practice of Medicine, 1914, p. 496.
3. Foss, H. L.: Ann. Surg., 1916, 64, 39.

tinized in view of the work recently reported by Boas.[4] Examination will frequently reveal occult blood in patients apparently cured by the operation, in whom there is absence of pain and other subjective symptoms. As suggested by Carlson, the relief from pain following the administration of alkalies or following gastro-enterostomy may be due to other factors than the effect on the gastric juice. Burge[5] regards the digestive action of the gastric juice together with decreased resistance or oxidative properties of the mucosa cells

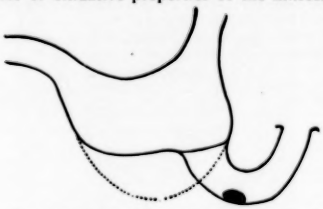

Fig. 2.—Pawlow pouch arranged to secure retention of gastric juice in the pouch.

as the causative agents in gastric ulcers. Bolton[6] gives a number of experiments in which artificially produced hyperacidity delayed the healing of experimental ulcers in rabbits. The degree of acidity employed by Bolton is far in excess of that found normally in the rabbit, and from the work of Hardt[7] and others there is considerable doubt whether there is an actual hyperacidity in cases of gastric or duodenal ulcer. The experiments of Friedman and Hamburger[8] are not very conclusive on this point. Their results indicate pyloric stenosis with consequent food retention in the stomach and hypersecretion of gastric juice as the important factors in the delayed healing of gastric ulcer. So many others factors are involved in their experiments that the effect of the gastric juice alone in determining the chronicity of ulcers is not evident. E. C. Rosenow[9] has produced acute and chronic ulcers in the stomach of dogs by the injection of certain strains of streptococci, obtained from the depth of gastric ulcers in man. He has also shown that gastric and duodenal ulcers in man are usually infected, that the route of infection is by way of the blood stream, and that the primary focus of infection may be in some distant part of the body. The importance of the difference in virulence of different species and strains of bacteria and the possibility of reinfection from the primary focus, as important factors in determining the chronicity of ulcers, have not been sufficiently considered. No work accurately controlled has as yet been reported showing the relative rates of healing of acute lesions in the stomach and duodenum both in the presence and in the absence of active gastric juice.

EXPERIMENTAL PROCEDURE

1. *Preparation of Experimental Animals.*—Healthy dogs were selected for the experiments and were prepared according to the following technic: In one series of four dogs, the regular Pawlow operation, for producing a second small stomach, was done and the pouch brought to the surface through the left rectus muscle. In this case the axis of the pouch was perpendicular and there was an optimum condition for drainage of the gastric juice secreted in the small stomach (Fig. 1). In another series of four dogs the Pawlow operation was performed, but in this case the pouch was brought to the surface high up on the left side just below the costal margin (Fig. 2). Here the outlet was the highest part of the pouch, and, as a result, the gastric juice secreted could not escape until the small stomach was full. Two other factors were instrumental in keeping the pouches of the second series of dogs at all times full of gastric juice. Owing to the formation of scar tissue about the fistula and subsequent contraction, a functional valve was formed in several cases. In all of the dogs of this series, the irritation of the juice on the skin about the fistula was considerable and the animals could nearly always be found lying on the right side. Examination in these cases always showed the pouches full of juice and at times under a little pressure. In both series of dogs, the gastric juice was tested for acidity and pepsin strength.

For the experiments on the rate of healing of acute duodenal ulcers in the absence of gastric juice, dogs were prepared in the following manner: The pylorus was excised, the pyloric end of the stomach infolded and closed, and the upper part of the duodenum closed. Posterior gastro-enterostomy was then performed. In this case it is fair to assume that the upper blind end of the duodenum was free from acid chyme at all times. Whatever chyme regurgitated into the duodenum from the gastro-enterostomy opening would be neutralized by the alkaline bile and pancreatic juice, and the duodenal peristalsis incited would carry the neutralized

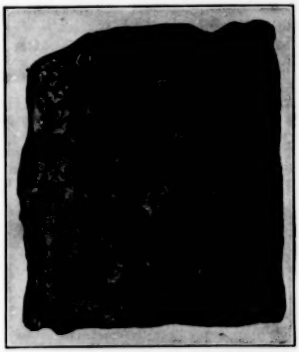

Fig. 3 (Dog 38, Table 4).—Ulcer in the duodenum (fifteen days) not exposed to the action of gastric juice.

chyme back to the jejunum. To obtain data on the rate of healing of duodenal ulcers in the presence of gastric juice, normal dogs were used.

2. *Production of Ulcers.*—Local injection of a 5 per cent. solution of silver nitrate was chosen as the surest method of producing ulcers. The technic employed was similar to that of Friedman and Hamburger.[8] For the production of ulcers in the Pawlow

4. Boas: Deutsch. med. Wchnschr., 1916, **42**, 64.
5. Burge, W. E., and Burge, E. L.: The Cause of Gastric Ulcer, THE JOURNAL A. M. A., April 1, 1916, p. 998.
6. Bolton: Jour. Path. and Bacteriol., 1915, **20**, 133.
7. Hardt: Am. Jour. Physiol., 1916, **40**, 314.
8. Friedman, J. C., and Hamburger, W. W.: Experimental Chronic Gastric Ulcer, THE JOURNAL A. M. A., Aug. 1, 1914, p. 380.
9. Rosenow, E. C.: The Etiology of Articular and Muscular Rheumatism, THE JOURNAL A. M. A., April 19, 1913, p. 1223; The Newer Bacteriology of Various Infections as Determined by Special Methods, Sept. 12, 1914, p. 903; Elective Localization of Streptococci, Nov. 13, 1915, p. 1687.

pouches, 1.5 c.c. of a 5 per cent. solution of silver nitrate was injected through the mucosa into the submucosa of the wall of the small stomach. A syringe with a long hypodermic needle was used for the operation, and the fistula was held open with a small rectal speculum. The injection of silver nitrate produced a local necrosis of the mucosa, the necrotic material sloughing off in a few days, leaving an acute ulcer.

Fig. 4 (Dog 40, Table 3).—Ulcer in the duodenum (fifteen days) exposed to the action of gastric juice.

In the work on the duodenum, the technic was as follows: In the normal animals a laparatomy incision was made through the right rectus, and the duodenum secured, and lifted out through the incision. An injection of 1.5 c.c. of a 5 per cent. solution of silver nitrate was made through the serosa and muscularis into the submucosa of the intestine. A similar procedure was observed in the other series of animals, after allowing

TABLE 1.—EXPERIMENTS TO DETERMINE THE LENGTH OF TIME REQUIRED FOR THE HEALING OF ULCERS IN THE PAWLOW POUCHES, ARRANGED FOR OPTIMUM DRAINAGE OF GASTRIC JUICE, OR IN ABSENCE OF GASTRIC JUICE

No. of Dog	Number of Experiment	Number Days for Complete Healing of Ulcer	Acidity of Gastric Juice					
			Maximum		Minimum		Average	
			Free	Total	Free	Total	Free	Total
2	1	9	0.000	0.1550	0.000	0.0912	0.000	0.0912
2	2	15	0.000	0.1641	0.000	0.0912	0.000	0.0912
4	1	7	0.1915	0.2827	0.000	0.036	0.000	0.1276
4	2	8	0.1824	0.2736	0.000	0.0819	0.000	0.1094
4	3	10	0.2006	0.2918	0.000	0.036	0.000	0.1185
6	1	8	0.0912	0.1003	0.000	0.036	0.000	0.045
8	1	9	0.1003	0.2371	0.000	0.054	0.0912	0.1094

Average time for healing of ulcers is nine days.

ten days for the healing of the operation for gastroenterostomy and pylorectomy.

In both the work on the stomach and duodenum special effort was made to produce ulcers of the same size in all cases. The needle was inserted into the submucosa and the same amount of silver nitrate was always injected. The silver nitrate produces an immediate coagulation necrosis of the tissue which is visible as a white or gray area about the point of injection. With this as a guide, the same amount of tissue destruction would be produced in every case.

RESULTS

The results in brief are as follows:

1. The average time required for the healing of the experimental ulcers in the Pawlow pouch, arranged so that there was at all times a quantity of active gastric juice in the pouch (Fig. 2), was eight days (Table 2).

2. The average time required for the healing of the ulcers in the pouches, in which there was a maximum drainage for the gastric juice (Fig. 1), was nine days (Table 1).

3. The average time required for the healing of the experimental ulcers in the duodenum, both in the presence and in the absence of acid chyme, was twenty days (Tables 3 and 4, and Figs. 5 and 6).

TABLE 2.—EXPERIMENTS TO DETERMINE THE TIME REQUIRED FOR HEALING OF ULCERS IN PAWLOW POUCHES IN THE PRESENCE OF GASTRIC JUICE

No. of Dog	Number of Experiment	Number Days for Complete Healing of Ulcer	Acidity of Gastric Juice					
			Maximum		Minimum		Average	
			Free	Total	Free	Total	Free	Total
1	1	9	0.045	0.2736	0.000	0.0361	0.045	0.1276
1	2	9	0.045	0.1003	0.000	0.0273	0.1003	0.1185
1	3	5	0.045	0.2644	0.000	0.1003	0.0912	0.1003
3	1	9	0.1094	0.2188	0.000	0.0912	0.1094	0.2644
6	1	8	0.0912	0.2006	0.000	0.1003	0.0000	0.2006
9	1	8	0.1003	0.1915	0.000	0.1094	0.0912	0.1459

Average time for healing of ulcers is eight days.

4. Animals, killed and examined at necropsy before the ulcers in the duodenum were completely healed, showed ulcers in practically the same stage of healing in both cases (Figs. 3 and 4).

5. Bacteriologic examination of the ulcers in five of the dogs showed a hemolytic streptococcus in pure culture in two cases, mixed staphylococcus and streptococcus in one case, *B. coli* in one case, and *B. subtilis* in one case. The examination was made with the technic of Dr. E. C. Rosenow.[9]

Fig. 5 (Dog 16, Table 4).—Ulcer in the duodenum (twenty-two days) not exposed to the action of gastric juice.

COMMENT

From the experimental evidence obtained, it would seem that the digestive action of the gastric juice is not the important factor in the delayed healing of acute lesions of the stomach and duodenum, and the consequent production of chronic ulcers. Acute lesions of the mucosa of the stomach and duodenum do not require any longer time for healing, or display any more tendencies toward chronicity when exposed

to gastric juice of normal acidity and pepsin strength, than do similar lesions in the absence of gastric juice.

Gastric and duodenal ulcers are, therefore, locally infected areas of the wall of the digestive tract, irrespective of whether the ulcers themselves are produced by primary infection from the blood stream (Rosenow), by local circulatory disturbances, or by mechanical and chemical factors acting on the mucosa

Fig. 6 (Dog 32, Table 3).—Ulcer in the duodenum (twenty days) exposed to the action of gastric juice.

from the lumen of the intestine. It is well known that the tissues surrounding the ulcers are hyperemic. It is highly probable that in these hyperemic ulcer areas the nerves (sensory and motor) become hyperexcitable, as is the case in all other areas of infection. These hyperexcitable gastric nerves, subjected to stimulation by the normal gastric juice, may thus yield exaggerated responses (motor, inhibitory, and conscious). Carlson suggests that the favorable results from the alkaline and frequent feeding treat-

TABLE 3.—EXPERIMENTS TO DETERMINE THE TIME REQUIRED FOR THE HEALING OF ULCERS IN THE DUODENUM IN THE PRESENCE OF GASTRIC JUICE

No. of Dog	No. Days Since Production of Ulcer	Stage in Healing of Ulcer
37	10	Active ulcer; no healing
1	13	Active ulcer 1.5 by 1 cm.; no healing
40	15	Active ulcer 1 by 1.5 cm.; no healing
32	20	Ulcer almost healed
33	20	Ulcer completely healed
34	26	Ulcer healed
2	31	Small depressed area in mucosa
22	45	Completely healed

ments in these cases may be due to the removal of this added stimulation of the hyperexcitable nerves rather than the prevention of any digestive or corrosive action of the pepsin hydrochloric acid on the exposed tissues. The degree of reflex disturbance from the acid stimulation of the nerves in the ulcer areas would vary with the individual, depending on the severity and extent of the infection, as well as on the individual stability of the entire nervous organization. We should expect it to be much greater in man than in the lower animals.

The bacteriologic examination of the ulcers is interesting in that it shows that lesions, produced experimentally by chemical means, may subsequently become infected. The bacteria are the same as those isolated from clinical ulcers in man. It seems probable that

TABLE 4.—EXPERIMENTS TO DETERMINE THE TIME REQUIRED FOR THE HEALING OF ULCERS IN THE DUODENUM IN THE ABSENCE OF GASTRIC JUICE

No. of Dog	No. Days Since Production of Ulcer	Stage of Healing of Ulcer
36	5	Perforation
25	7	Active ulcer; no healing
27	9	Active ulcer, 0.5 by 1 cm.; no healing
11	9	Active ulcer, 1.5 cm. dia.; no healing
23	10	Active ulcer, 1 cm. dia.; no healing
38	15	Active ulcer; edges raised; indurated
16	22	Ulcer 0.5 cm. dia.; edges indurated
8	24	Ulcer nearly healed; one small depressed area
39	27	Ulcer healed
20	32	Ulcer healed
14	39	Ulcer healed

the infection is direct from the alimentary tract, since it is not likely that these bacteria would be found in the circulating blood of otherwise healthy dogs.

CONCLUSIONS

1. The digestive activity of gastric juice is not the important factor in the delayed healing of acute ulcers of the stomach and duodenum and the consequent formation of chronic ulcers.

2. Ulcers produced by local injection of solutions of silver nitrate become subsequently infected with organisms probably from the alimentary tract.

THE IMPORTANCE OF AURAL SYMPTOMS IN THE EARLY DIAGNOSIS OF TUMOR OF THE CEREBELLOPONTILE ANGLE *

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The eighth nerve, comprising the auditory and the vestibular, from a diagnostic surgical standpoint, may be divided into three portions: the *peripheral*, comprising the end organs in the labyrinth; the *intradural*, extending from the fundus of the internal auditory meatus to its entrance in the groove between the pons and the medulla, and the *intracerebral* ramifications of its tracts in the brain to its cortical centers in the temporosphenoidal lobe and cerebellum.

The sudden and commanding character of the symptoms in inflammation of the cochlea and semicircular canal are due largely to the small, inelastic walls of the containing bony labyrinth, compelling an immediate paralysis of the function of the delicate nerve structures; their bony case not allowing the gradual development of symptoms from slow increasing pressure on the nervous structure, which frequently occurs in nervous tissue elsewhere. (The greater resistance of the auditory portion in the labyrinth in serous labyrinthitis with the preservation of hearing after the complete abolition of the vestibular function is, however, somewhat of this nature.)

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After the entrance of the eighth nerve into the pons, its proximity to other vital centers generally causes the aural symptoms to be immediately overshadowed. The diagnostic symptomatology of lesions involving the intracerebral portion of the auditory nerve is but rarely recognized, although in my experience such lesions are far from uncommon.[1]

In the passage of the eighth nerve, through the small space from the fundus of the internal auditory meatus to the medulla, across the posterior border of the middle peduncle of the cerebellum, the nerve, while intradural, is still extracerebral, and, being in a free space, may escape for a long time a paralyzing pressure from a tumor of the cerebellopontile angle.

Many cerebellopontile angle tumors, especially dural endothelioma and neurinoma,[2] are of very slow growth, and disturbances of hearing and of the vestibular apparatus of the affected side are frequently the only symptoms of which the patient complains, the aural often preceding other symptoms for months, and sometimes for years.[3] On the recognition of the intracranial origin of the aural symptoms may depend the success of surgical intervention, and the reputation of the aurist. I know of many instances in which, after weeks and months of unsuccessful inflammations and local treatments, the development of a papilledema has first called attention to the true cause of the deafness (Fig. 1).

Fig. 1.—Large endothelioma springing from dura, causing great compression of cerebellum. Aural symptoms were present for years prior to general symptoms of tumor.

In studying the aural symptoms of cerebellopontile angle tumors, it should be remembered that they are but a modification of the acute aural manifestations so frequent in fracture of the base of the skull, extending through the petrous portion of the temporal bone. The end-result of compression of the eighth nerve, whether from fracture or tumor, is the same, namely, loss of function, deafness and loss of vestibular reactability. However, in one, the function of the vestibular apparatus of one side is suddenly upset; but, *in tumor, the slow pressure on the nerve allows of a readjustment of the vestibular apparatus during the process of compression.*

In fracture there are suddenly: (1) tinnitus and deafness; (2) loss of vestibular reactability, associated with (3) vertigo; (4) spontaneous nystagmus away from the affected side, and (5) spontaneous pointing deviations of both homolateral and contralateral extremities toward the side of the lesion. The deafness and loss of vestibular reactability are permanent, but the nystagmus, dizziness, and spontaneous pointing deviations rapidly disappear. The transient vestibular manifestations, the dizziness, nystagmus and spontaneous pointing deviations result from a total, sudden loss of function of the vestibular apparatus of the affected side, and the early abolition of these symptoms is due to a readjustment of the vestibular system, as a whole, to meet the changed condition.

It is through *the same* readjustment in the vestibular apparatus (*of the opposite as well as the affected side*) which, in the acute cases, so early abolishes the spontaneous nystagmus, pointing deviations and dizziness, that the slowly growing cerebellopontile angle tumors may first manifest themselves.

We have at our command for the early diagnosis of intracranial disturbances of the eighth nerve: (1) functional examination of the auditory portion, and (2) functional examination of the vestibular portion.

So important is a complete and systematic routine functional examination of the eighth nerve, that all patients presenting themselves with disturbance of the hearing or disturbance of the equilibrium should, because of the time consumed and the part played by the personal equation, be delegated for examination to a specially trained attendant.

This routine examination by an attendant in my office consists, for the auditory portion, in ascertaining: (1) the hearing distance of the (*a*) watch, (*b*) whisper, and (*c*) voice; (2) the lower and upper tone limits and the measuring of their respective durations; (3) the Rinne-positive or negative; (4) reference of the Weber at both vertex and teeth, and (5) the measurement of the duration of the bone conduction.

The routine examination of the vestibular apparatus consists of ascertaining (1) the presence or absence of spontaneous nystagmus. If from the above I suspect labyrinthitis or intracranial involvement, the attendant further (2) examines the spontaneous pointing of both arms and legs, and (3) explains to the patient the caloric test: (*a*) its inconveniences, such as vertigo, possible nausea and vomiting; (*b*) the short duration, during induced nystagmus, of the pointing deviation and falling, and (*c*) its successful application, largely depending on the patient resisting the natural tendency to close the eyes. (*d*) The attendant then proceeds to the repeated rehearsing with the patient of the pointing and falling positions.

When the patient thoroughly understands what is required of him (4) the cold caloric test is applied in my presence, and during it are noted: (*a*) the induced nystagmus; (*b*) the rapidity of its induction; (*c*) whether it is associated with vertigo or a sensation of dizziness; (*d*) the pointing deviation for both arms and legs during the induced nystagmus, and (*e*) the falling tendency.

If the patient has been thoroughly drilled by the attendant prior to the application of the caloric (cold) test, it is remarkable what a small amount of time is consumed in making the test, and how much can be ascertained in the few seconds of an induced nystagmus.

1. Starr: Jour. Nerv. and Ment. Dis., 1910, **37**, 401. Guthrie: Jour. Laryngol., Rhinol. and Otol., 1915, **30**, 177. Weinland: Arch. Psychiat., **26**, 375. Campbell: Histological Studies in Cerebral Localization, London, 1905. Mills: Jour. Nerv. and Ment. Dis., February, 1912.
2. Healy: Jour. Nerv. and Ment. Dis., 1909, **26**, 229. Henneberg and Koch: Arch. Psychiat., **36**, No. 1.
3. Wimmer: Six Cases of Acoustic Nerve Tumors with Operation, Hospitalstidende, September, 1914, p. 1169. Schmiegelow: Ztschr. f. Ohrenh., July, 1915.

In cerebellopontile angle tumors growing from the dura, endothelioma, or attached to the acoustic nerve, neurinoma or fibroma molluscum, one of the first symptoms complained of is a slight deafness with a distressing tinnitus. Routine examination with the tuning forks may make an early diagnosis of an intracranial origin by (1) a reduction of the duration of the bone conduction of the affected side; (2) the referring of Weber to the unaffected side; (3) a positive Rinne on the affected side, and (4) frequently greater alteration of the tuning fork reactions than is accounted for by the amount of the loss of hearing.[4]

All these are too well known to be discussed. In the vestibular apparatus, however, many problems are still in the realm of speculation.

Spontaneous nystagmus is generally associated with tumor of the cerebellopontile angle when the tumor causes compression of the cerebellar cortex, but its slow growth frequently allows of considerable displacement of the cerebellum without nystagmus; in fact, the slowly progressive deafness has, as a rule, long passed into total deafness before the development of nystagmus, by which time a papilledema from increased intracranial pressure may have also appeared. Spontaneous nystagmus is apt to be a late manifestation of tumor originating in the cerebellopontile angle, in contradistinction to tumors growing into it from the cerebellum.[5] Spontaneous nystagmus is also present in a certain proportion of tumors situated in the cerebrum,[6] in which case, however, there will be no disturbance of the auditory apparatus, the hearing and the tuning fork reactions being normal.

Fig. 2.—Small tumor with large secondary cyst of cerebellum causing great hydrocephalus. During life, spontaneous nystagmus was absent. Vestibular reactability was at times present and again absent.

Again, in intracerebellar growths, glioma, not involving the cerebellar cortex, spontaneous nystagmus may be entirely absent, although the growth may have attained considerable size; but in these also the tuning fork reactions are apt to be normal, deafness not usually being present.

Spontaneous Pointing Deviations. — Spontaneous deviations are, in my experience, very rare during all stages of cerebellopontile angle tumors or intracerebellar lesions of slow development, in contrast to their presence in the early stages of acute lesions, fractures and abscesses. Especially in those cases not associated with a spontaneous nystagmus are spontaneous deviations uncommon. In cases associated with nystagmus, slight deviations from the normal are frequently present, but the deviations are very irregular and variable in their appearance, my experience confirming Grey's[7] observations.

Pointing Deviations During Induced Nystagmus from Cold Caloric.—In cerebellar abscess during an induced nystagmus, there is frequently an absence of the normal pointing deviation of the homolateral side, but in cerebellar growths, deviations are variable. I believe that in small tumors (especially those confined to the auditory nerve, as in a case observed by me of fibroma molluscum, causing complete deafness, and three years later involving the opposite ear) no alteration from the normal pointing deviations will be present. In the larger growths of the angle and those originating in the cerebellum and growing into the angle, the interference with the normal pointing deviations will depend on the tumor being extensive enough to interfere permanently with the functioning of the cerebellar cortex or tracts of the different parts.

In increased intracranial pressure from disturbances of the cerebrospinal fluid system, variations in the degree of increase may cause variable pointing deviations, the latter being at one time absent and at another time present (Fig. 2).

Vestibular Reactability of the Unaffected Side.—The diagnostic assistance obtained from the cold caloric of the ear on the opposite side to the lesion has been of the greatest value in the cerebellopontile angle tumor. In cases of partial deafness of one ear, cold caloric applied to the unaffected ear uniformly gave a *greatly diminished reactability.*[8]

After the deafness has become complete and symptoms of increased intracranial pressure, such as a papilledema, present themselves in my experience, it is frequently impossible to induce nystagmus by the syringing of cold water into the ear of the unaffected side; and if a slight nystagmus is induced, it is unaccompanied by vertigo or vomiting, at most a slight sensation of momentary giddiness being complained of. Also in the early cases in which hearing of the affected side is still present, while syringing of cold water in either ear induces a slight nystagmus, this nystagmus is not associated with vomiting or vertigo, but generally with a "floating" or swimming sensation of very transient duration.

The value of the diminution of the vestibular reactability of the unaffected side, as a sign of increased intracranial pressure, was originally stated[9] in a communication to the American Otological Society in June, 1912. Confirmation of this observation has frequently occurred since that date.

Examination with regard to the reactability of the vestibular apparatus in patients suffering from marked internal hydrocephalus, the result of intracerebellar

4. Holinger: Tr. Ninth Otol. Cong., p. 494.
5. Weisenburg, T. H., and Work, Philip: The Diagnosis of Tumors in the Posterior Cranial Fossa, THE JOURNAL A. M. A., Oct. 16, 1915, p. 1345.
6. Grey, E. G.: Studies on the Localization of Cerebellar Tumors, THE JOURNAL A. M. A., Oct. 16, 1915, p. 1341.
7. Grey, E. G.: Am. Jour. Med. Sc., 1916, **151**, 693.
8. All caloric tests were made with patients seated in an upright position.
9. Eagleton, W. P.: Decompression for the Relief of Disturbances of the Auditory Apparatus of Intracranial Origin. Report of Three Cases with a Previously Undescribed Aural Condition, Laryngoscope, 1912.

tumors, may give very conflicting findings at different examinations.

Figure 2 shows a large intracerebellar glial cyst, with marked secondary hydrocephalus. The child was repeatedly examined during a year and a half prior to death. Spontaneous nystagmus was never present, and the spontaneous pointing deviations observed were too slight and transient to be definite. She was repeatedly subjected to the cold caloric. During a violent headache, doubtless due to a disturbance of the constantly present internal hydrocephalus, it was impossible to induce nystagmus or pointing deviations; a day later, however, cold water in either ear easily induced nystagmus, associated with normal pointing deviations and falling tendencies; but the nystagmus was never associated with a subjective sense of vertigo, or with vomiting.

It would seem, then, that alterations in increased intracranial pressure influences the possibility of the production of an induced nystagmus and of associated pointing deviations, abolishes the vomiting so often associated with the cold caloric, and lessens to a marked degree the subjective discomfort of dizziness.

The absence, following cold caloric of vertigo (the only complaint frequently being a transient giddiness) and vomiting, with a reduction of the vestibular reactability of the unaffected side, may probably be regarded as symptoms of an increased intracranial pressure.

It would appear, therefore, that the aural manifestations of cerebellopontile angle tumor are: (1) progressive deafness, beginning with a disturbance of the proper relationship between the degree of hearing and the tuning fork reaction, especially the duration of the bone conduction to the degree of deafness, and ending in (2) total deafness; associated with (3) loss of vestibular reactability of the affected side; and during the time that the vestibular apparatus is still functionating (4) a gradual readjustment of the vestibular apparatus of the contralateral as well as the homolateral side is going on, which is manifested by (*a*) a reduction or even a temporary abolition of its reactability to the cold caloric (at least when applied in the upright position); (*b*) an absence of the vertigo and vomiting which normally accompany the induced nystagmus from the cold caloric, and (*c*) absence of spontaneous pointing deviations. As the cerebellar cortex becomes affected, however, may be added: (5) spontaneous nystagmus; (6) spontaneous pointing deviations, and (7) absence during an induced nystagmus of the normal pointing deviations of the homolateral side.

15 Lombardy Street.

Women in Industry.—In December, the Committee on Labor of the House of Representatives favorably reported a bill creating a woman's division in the Department of Labor to investigate and report on all matters pertaining to the welfare of wage-earning women, and especially to investigate the competitive influence of women in the several industries, the adjustment of modern industrial mechanism and management to the nervous organization of women, and the influence of industrial employments on the subsequent home life of wage-earning women. The chief of this division is to be a woman appointed by the secretary of labor. The division will cooperate with the Bureau of Labor Statistics and with the Children's Bureau, in the same department. The bill has the approval of the secretary of labor.

CLINICAL TYPES OF LABYRINTHITIS

WITH COMMENTS ON TREATMENT *

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Preliminary to a discussion of the clinical types of labyrinthine disease, may I remind you that the hardness of the labyrinthine capsule and its anatomic structure seem to be so arranged by nature that they form an unusually strong barrier against invasion by a purulent process?

It is estimated by Bezold that the labyrinth becomes involved only once in 500 cases of purulent otitis media. Friedich and Hinsberg, on the other hand, estimate its occurrence once in 100 cases. The latter seems to me more nearly correct. The most vulnerable points in the labyrinthine wall are the horizontal semicircular canal, the fenestra ovalis, the fenestra rotunda, the promontory and, from the cranial side, the internal auditory meatus. The labyrinth may be invaded by a purulent process from three sources: (*a*) from the middle ear, (*b*) from the blood currents, (*c*) from the meninges. Our cases come chiefly from the first-mentioned type, wherein the middle ear spaces become the seat of a purulent lesion, which in turn advances into the bony structure, and during its progress attacks the labyrinthine wall and finally invades the delicate structures within the labyrinthine capsule. This gives rise to our so-called purulent labyrinthitis.

The following description of the various types of labyrinthine inflammation is based largely on clinical data. Thus, we broadly divide internal ear inflammation into circumscribed labyrinthitis and diffuse labyrinthitis. Before entering into a discussion of the subdivisions it may be well to eliminate those cases of chronic suppurative otitis media which have vertiginous attacks, but without disturbance in the functions of the labyrinth. These patients complain of attacks of vertigo, but they have hearing, a normal rotation test, a normal caloric test and no evidence of fistula. As a basis of these attacks of vertigo it is believed that middle ear disease has attacked the bony labyrinthine capsule without eroding the same. This type of labyrinthine disturbance is known as paralabyrinthitis. Probably there should be added to this type of paralabyrinthitis those cases in which the patient suffers for a few days from labyrinthine irritability as a result of irritation caused by injury to the stapes in performing a paracentesis. Such a case was recently reported by Guntzer. The family physician did a paracentesis on a patient who evidently had no infective process, but was suffering from an attack of acute catarrhal otitis media:

There was history of pain in the right ear for two days; no discharge; since the previous evening has been unable to walk; was dizzy and vomited. Examination of the right ear showed the membrana tympani slightly reddened, no bulging, and a pinhead perforation about the center of the superior-posterior quadrant, with a droplet of serous red discharge exuding. The patient had a spontaneous horizontal nystagmus to the left and rotary on looking up; on attempting to rise fell toward the right. Hearing was not impaired, no mastoid tenderness, no fever, pulse 88. Diagnosis of labyrinthine irritation was made, but no assignable cause could be elicited. This condition lasted ten days before the patient was able to leave the bed. At a subsequent office visit the patient confided

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that his family physician was called the evening before Dr. Guntzer's visit to the patient. The patient was told he had an abscess in his ear and the doctor used an instrument to open it, when the patient at once became dizzy, nauseated, vomited and was unable to walk. The labyrinthine irritation was most likely due to disturbance of the foot plate of the stapes. Fortunately the middle ear and labyrinth were not infected, there was no discharge and the patient escaped the dire consequences that may have followed such an infection.

The writer has had similar experiences in patients whose ear drums have been opened by inexperienced operators, but more often these accidents result in at least an attack of serous labyrinthitis with partial or total loss of hearing, and occasionally the traumatisms are followed by acute purulent labyrinthitis with fatal results. The attacks of vertigo, in such cases, are probably due to circulatory changes within the labyrinth or to transient labyrinthine irritation. Their cause, however, is not definitely known.

In a certain proportion of cases of paralabyrinthitis, as the disease progresses, one of two things occur: either there is a sudden rupture of the infective material into the labyrinth, causing diffuse labyrinthitis, or gradual erosion of the labyrinthine capsule occurs at some place, with the walling off of the infective process, resulting in a circumscribed labyrinthitis. When the latter occurs there are attacks of vertigo with nausea or vomiting, which become more severe until the patient finally seeks relief. Several of these patients have come to my clinics having practically made their own diagnosis. Thus they have stated that having had chronic discharging ears they recently found, on introducing the index finger into the external auditory canal, that they were seized with vertigo, nausea and vomiting. In some instances we have been able to repeat this experiment and by firm pressure on the tragus, closing the external auditory canal, we have been able to elicit a positive fistula test. This circumscribed labyrinthitis occurs almost invariably with chronic suppuration of the ear, either tuberculous or cholesteatomatous. In such cases the disease has not invaded the endolabyrinthine spaces. Thus, in such instances, although the bony capsule of the labyrinth has been eroded, the disease has not really entered the membranous labyrinth and the end-organs within the labyrinth still perform their functions or at least are capable of irritation.

Such patients may have a fairly acute hearing, the rotation test and the caloric test are normal and the fistula test is positive. There may or may not be spontaneous nystagmus to both sides. The writer has records of five (formerly published) cases of this type and has seen many others. These cases of circumscribed labyrinthitis should be differentiated from the larger class of cases of necrosis of a part or the whole of the bony capsule, with destruction of the end-organs, many of which are discovered only at the time of performing the radical mastoid operation. The latter class will be referred to later in this paper.

Diffuse labyrinthitis may be secondary to either an acute or chronic suppuration of the middle ear. It may be metastatic or may result from an extension of meningitis through the pathways that connect the labyrinth with the subdural lymph spaces. The metastatic cases usually complicate mumps. Such a case was reported by the writer in the *New York Medical Journal* of Aug. 2, 1913, in a boy of 18 who was suffering from mumps of great severity, during which time he had extreme vertigo and tinnitus in the right ear followed in three days by total deafness. He was unconscious for four days. The vertigo continued for over two weeks, when it gradually subsided. After three months there was a partial return of the function of the static labyrinth, but he is still totally deaf. Endocranial complications, with the exception rarely of serous meningitis, never occur in these cases.

Diffuse labyrinthitis must be considered under two heads: first, those cases that present symptoms, so-called manifest or acute; and second, cases without symptoms, so-called latent or chronic cases. Cases of diffuse manifest labyrinthitis may occur with either acute or chronic middle ear suppuration. The onset is sudden, there is rapidly developing deafness, nausea, vomiting, vertigo and nystagmus. The vomiting differs from that of intracranial disease in that it is invariably associated with nausea. There is no projectile vomiting. The nausea bears no relationship to food. The nausea and the vomiting follow movements of the head. The nystagmus is of a mixed, horizontal and rotary type and is directed to the sound side. With the nystagmus there are also the subjective sense of being turned and the apparent turning or spinning of objects in the environment. The objective vertigo consists of reaction movements of the trunk and extremities in the direction of the slow component of the nystagmus, that is, toward the diseased ear. Such patients, in attempting to walk, fall toward the diseased side or stagger toward the diseased side and must be supported. There are no general symptoms, that is, there is neither rise of temperature nor acceleration of the pulse rate unless intracranial symptoms intervene. We have seen all types of labyrinthitis and are convinced that even grave intralabyrinthine suppuration may occur without fever. This history will illustrate:

The patient had had suppuration in the right ear for five months, with no complicating symptoms up to three days before coming under observation. Two days previously he had been seized with an attack of vomiting and dizziness, the latter of which had remained continuously. He had no rise of temperature and did not complain of pain in the mastoid, nor was there any tenderness on pressure. He was totally deaf in the right ear. He had spontaneous rotary nystagmus to the left. When walking he was inclined to fall toward the right. He was immediately admitted to the hospital, and the radical mastoid operation was performed. The mastoid antrum and cells contained a small amount of pus, and there was much granulation tissue in the tympanic cavity. There was no fistula of the labyrinthine capsule, but the region of the round and oval windows was granular and soft to the probe. The patient made a good recovery from the ether and passed a good night; was rational and answered questions early the following morning. Later in the morning he began to show signs of meningeal irritation, with a moderate rise of temperature. At noon of the same day there was a sudden rise of temperature to 105 F., he became unconscious, and died at 2:30 p. m., apparently of respiratory failure.

It must not be forgotten, in this connection, that diffuse labyrinthitis is a complication which often occurs during an acute exacerbation of chronic suppuration of the middle ear and mastoid, and fever, when it accompanies such a labyrinthitis, is, in all probability, due to the recrudescence of the mastoid disease.

The attempt by the Vienna school to differentiate between serous labyrinthitis, so called, and suppurative labyrinthitis, so called, leaves much to be desired. This differentiation rests on the retention or destruction of the labyrinthine functions. However, several cases which were clearly serous, in that they occurred during the first twenty-four or forty-eight hours following the beginning of the acute middle ear abscess, have had total destruction of functions during the height of the

symptoms. A recent case occurring on my service at the Manhattan Eye, Ear and Throat Hospital, treated by Dr. Friesner, is of this type.

L. H., a man, aged 42 years, was admitted Feb. 25, 1916, complaining of acute suppurative otitis media on the right side. He refused myringotomy. Forty-eight hours after the spontaneous rupture of the drum he had an acute diffuse labyrinthitis with vertigo, nausea, vomiting, etc. Twelve hours after the beginning of the labyrinthitis he was totally deaf, had a spontaneous nystagmus to both sides, more marked to the diseased side, with no falling nor vomiting. Eleven days after the beginning of the acute otitis a simple mastoid operation was done. The mastoid healed and the middle ear became dry. He complains of tinnitus in the affected ear and is totally deaf. The caloric reaction is negative. Rotation to right, nystagmus 18 degrees; rotation to left, 20 degrees. A diagnosis of serous labyrinthitis was made, based on the fact that the labyrinthine invasion occurred during the first few days of an acute otitis media and the symptoms were not severe. Hence, despite the necessity to operate on the mastoid the labyrinth was untouched.

While this differentiation is unfortunate in the selection of the terms "serous" and "suppurative," it contains this truth, namely, so long as any irritability remains in the labyrinth, extension from the labyrinth to the intracranial structures does not occur. It would perhaps have been better, then, to call those cases in which the function of the labyrinth is destroyed "grave labyrinthitis," and those in which, despite the presence of labyrinthine symptoms, the function, or rather irritability, of the labyrinth was retained "mild labyrinthitis."

The diffuse manifest labyrinthitis which complicates acute middle ear suppuration may be divided into two classes, first, those which occur within the first three or four days of the disease, and second, those which occur six, eight or ten weeks after the beginning of the middle ear suppuration, in the presence of an acute mastoiditis. In the first class the labyrinthitis is almost invariably mild or so-called serous. It rarely leads to any intracranial complication and frequently, after the middle ear suppuration has run its course, the function of the labyrinth, at least of the static labyrinth, is restored. On the contrary, the cases of labyrinthitis which complicate latent mastoiditis, and occur eight or ten weeks after the beginning of the acute suppurative otitis media, are almost invariably grave, or so-called suppurative, and frequently lead to intracranial complications, that is, meningitis. As a rule, the latter cases are due to infection by one or other forms of capsulated coccus.

As has been stated above, the labyrinthine inflammations which complicate the chronic suppurating middle ear may be either manifest or latent. As in the cases which occur with the acute otitides, the manifest labyrinthitis may be either grave, that is, suppurative, or mild, that is, serous. The suppurative labyrinthitis which is progressing to the endocranial structures, that is, arousing a meningitis, is usually accompanied by fever and headache. The writer has several records of cases of this type. The so-called labyrinthine symptoms are very violent and do not become progressively less severe. On the contrary, those labyrinthine inflammations which are mild and have no tendency to involve the meninges have associated with them, as a rule, neither headache nor rise in temperature. Furthermore, in the uncomplicated cases the labyrinthine symptoms become day by day appreciably less severe. The most important signs of an extension of the labyrinthine suppuration to the meninges are headache and fever. In these cases, of course, there will be total destruction of labyrinthine irritability. The cerebrospinal fluid may also give us information regarding the extension of the disease to the meninges, even in the early stages.

There are cases of diffuse manifest labyrinthitis of the mild type which occur after the radical mastoid operation. This condition may come on any time during the healing of the radical mastoid cavity. It differs from the diffuse labyrinthitis which results from the disturbance of the stapes during the radical operation, in that in the former the symptoms do not occur for the first twelve hours after the operation, whereas, in the latter the symptoms supervene at once on the patients coming out of the anesthesia. By far the largest class of cases that we have met are those in which the labyrinth has been totally destroyed and in which there is no history of recent attacks of vertigo, vomiting, etc. These cases are discovered solely by making the functional test of the labyrinth, a test which we invariably make before performing a radical mastoid operation. Occasionally, no history of previous attacks of vertigo can be elicited. In others there is an indefinite history of vertigo and vomiting which has been referred to other organs, bilious attacks, for instance. The relationship between the vomiting and vertigo and the ear is not understood by them. There may be a spontaneous nystagmus directed to both sides which can be observed only when the eyes are turned to the extreme angle.

If the labyrinth destruction has existed for six months or more, it has been common in our experience to find a compensation test of rotation described by Ruttin. The caloric test is negative, as is the fistula test, and there is total deafness. When the labyrinth becomes filled with pus and granulations, there is an extension of the granulation tissue into the internal auditory canal and an occlusion of the labyrinthine artery occurs. This artery is a terminal artery and its destruction entails an extensive death of the bony labyrinthine capsule, with the formation of a sequestrum. In this type of cases we have frequently found a facial paralysis associated with the dead labyrinth. The facial paralysis is not invariably due to neuritis. We have seen cases in which a paralysis cleared up rapidly following the operation. Here, in all probability, the paralysis was due to pressure either of the granulation tissue or of a sequestrum on the nerve. This type of labyrinthitis is as dangerous as it is insidious, and often leads not only to meningitis, but also to cerebellar abscess and sinus thrombosis. Dr. John B. Rae in a paper read before the Medical Society of the State of New York, May, 1916, suggested the following classification of purulent labyrinthitis: acute diffuse labyrinthitis, chronic diffuse labyrinthitis, paralabyrinthitis with fistula, and paralabyrinthitis without demonstrative fistula.

The treatment of labyrinthitis varies considerably and the indications for operative interference are by no means uniformly recognized. There exists, furthermore, great difference of opinion as to when one should interfere in labyrinthine disease and as to the extent of that interference. The indications for operation depend on the type of labyrinthine involvement. In patients, for instance, with chronic suppurative otitis media, who have vertigo, but in whom there are no other signs of labyrinthine involvement, either of the auditory labyrinth or static labyrinth, the radical mastoid operation should be done, without disturbing the

labyrinth. This is followed, as a rule, by a cessation of the vertiginous attacks. In the type known as circumscribed labyrinthitis, where there are labyrinthine symptoms with a normal rotation test, a positive caloric test and a positive fistula test, the radical mastoid operation, only, should be done. Relief of the symptoms, as a rule, follows this procedure.

The indication for operation in cases of diffuse labyrinthitis may be considered under two heads: first, those cases of acute diffuse labyrinthitis which complicate the acute otitides, and second, those cases of diffuse labyrinthitis which occur with the chronic middle ear suppuration. There are cases of labyrinthine invasion which supervene within a day or two after the beginning of an acute otitis media. In such instances it is rarely necessary to do more than a free myringotomy. These cases are, as a rule, mild and not prone to cause intracranial complications. Even where the middle ear infection is complicated by an acute mastoiditis which requires interference, the labyrinth should not be touched. And this is true even though the hearing be lost and the caloric test be negative. In many of these cases the function of the labyrinth, at least of the static labyrinth, is restored. There is but one exception to this rule, and that is cases in which the labyrinth has been injured by the myringotomy knife.

With regard to those cases, however, in which a diffuse labyrinthitis supervenes on an acute middle ear suppuration, and latent mastoiditis of six, eight or ten weeks' duration, the story is a different one. Here, the labyrinth operation is fully justifiable in connection with the mastoid operation. Failure to open and drain the labyrinth may result in a meningitis, which otherwise might be avoided. In the event of a diffuse labyrinthitis complicating either an acute or chronic suppurating ear, in which there is headache, fever, or any symptoms from which one might suspect an intracranial extension of the labyrinthine suppuration, the labyrinth, of course, should be opened and drained. It is not to be expected that recovery will take place in the large proportion of cases, but the fact that the meningeal infection may occasionally be localized offers sufficient encouragement to warrant this attempt to save life. In these desperate cases no half-way measures are permissible and the Neumann operation, in which the bone is entirely removed, including the border of the internal auditory canal, together with drainage of the cerebellar spaces, is the ideal procedure.

Perhaps the greatest difference of opinion exists regarding those cases of diffuse labyrinthitis which complicate chronic suppurating middle ears. This is particularly true of the manifest variety, that is, cases in which there are labyrinthine symptoms and in which the functional test shows complete deafness and loss of irritability of the static labyrinth. According to the Vienna school here are the indications for labyrinthectomy. If the labyrinth has been invaded by the suppurative process and has been destroyed, the functional tests will, of course, show total absence of hearing and total loss of static irritability. Many of these cases are discovered accidentally in making the functional test before doing the radical mastoid operation. It is this class of cases which undoubtedly, in time gone by, led to a meningitis of unknown origin after the radical mastoid operation. A trauma, incident to the radical mastoid operation, frequently causes the lighting up of the labyrinthine suppuration which has previously been walled off from the meninges. Therefore, in these cases it is wiser, in addition to the radical mastoid operation, to open and drain the labyrinth. In many instances this type of case is associated with facial paralysis and part of the labyrinthine wall has been sequestered. Wherever there are signs of an intracranial complication, combined with a destroyed labyrinth, the posterior fossa should be uncovered, irrespective of the type of labyrinth operation performed.

DIFFERENTIAL DIAGNOSIS BETWEEN PURULENT LABYRINTHITIS AND CEREBELLAR LESIONS *

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I should like to state at the outset that I have not attempted a complete résumé of the differential diagnosis between labyrinthine and cerebellar lesions. That has been done very often and very well. I have rather sketched the differentiation from the point of view of cerebellar symptomatology, paying particular attention to one or two phases of the question.

Even though the occurrence of disturbance of balance, vomiting and nystagmus are strongly suggestive of the most common cause of such symptoms, namely, labyrinthitis, it must not be forgotten that other conditions, too, may arouse almost identical phenomena. Among the conditions which may cause symptoms similar to those of labyrinthine disease the most important are lesions in the cerebellum and it is necessary, therefore, that the latter be differentiated from labyrinthine disturbances.

It is, perhaps, best to discuss this differentiation from the point of view of cerebellar symptomatology under several heads: first, general symptoms of cerebellar lesions, which may be due either to increased intracranial pressure or, in the case of abscess, to the inflammatory process in the cerebellum and, second, focal symptoms of cerebellar lesions, which may be either symptoms of disturbance in movement or symptoms of disturbance in the vestibular apparatus.

In uncomplicated labyrinthitis there is very rarely headache. In cerebellar lesions there is almost invariably headache. With abscess of the cerebellum the headache may not be constant or it may be dull and boring, with unbearably severe exacerbations, but it is present in at least 90 per cent. of cases. With cerebellar lesions there may be disturbance of the sensorium, disturbance of respiration, bradycardia, optic nerve changes, paralysis of the cranial nerves, none of which, with the exception of disturbances in the eighth nerve, and occasionally the seventh, ever occur with labyrinthitis. There is vomiting with cerebellar lesions, as well as with labyrinthine, but in the latter the vomiting is never of the projectile type, that is, it is always associated with nausea. Furthermore, the vomiting with labyrinthitis becomes daily less, so that after a few days it ceases. On the other hand, the vomiting with cerebellar abscess is frequently projectile in type and is particularly persistent, much more so, as a rule, than with abscess in the temporosphenoidal lobe.

With cerebellar abscess and with labyrinthitis the temperature may be normal; with abscess it may be subnormal or there may be fever, but uncomplicated

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purulent labyrinthitis of itself never causes a considerable rise in temperature. With abscess there is frequently marked emaciation and there may be pathologic changes in the cerebrospinal fluid. In uncomplicated labyrinthitis these, of course, do not occur.

The focal symptoms of cerebellar lesions which help to differentiate them from labyrinthitis may be divided into symptoms of disturbances of movement, and symptoms of disturbances of the vestibular apparatus. With cerebellar lesions there may be *hypermetria*, asynergy, adiadokokinesis, tremor, disturbances in speech, atony or hypotony, catalepsy, hemiparesis and fixed attitude of the head. None of these occur with labyrinthitis.

Cerebellar lesions, however, may have in common with disturbances in the vestibular apparatus abnormalities in the voluntary movements of the trunk and of the extremities. When these disturbances in movements result from disease in the labyrinth or in the vestibular nerve, they are dependent for their direction on two elements, first, impulses from the static labyrinth, and secondly, impulses from the muscles and joints of the neck. Changes in these peripheral impulses cause alterations in the direction of the deviating movements. Thus, if, as a result of labyrinthine disturbance, a person has a spontaneous nystagmus directed to the right, when he attempts to stand erect he will fall to his left, if he faces forward. The tendency to fall, then, will be in the direction of the slow component of his spontaneous nystagmus. If, however, the afferent impulses to the cerebellum from the muscles and joints of his neck are changed by turning his face to one or the other shoulder, there will occur a change in the direction toward which he tends to fall. If this objective imbalance is due solely to a pathologic disturbance of the vestibular impulses, the tendency to fall will always be in the direction, in space, of the slow component of the resulting nystagmus. This relationship between the spontaneous nystagmus and the deviations is constant and characteristic of labyrinthine lesions and applies to the extremities as well as to the trunk. In the presence of a nystagmus of vestibular origin to the right, the arms held stretched out in front of the body will deviate to the left and the direction of this deviation will change with alterations in the position of the head.

On the contrary, the objective disturbances of balance due to cerebellar lesions, that is, the falling and the deviations of the extremities, bear no definite relationship to the spontaneous nystagmus if this be present. It is believed, although by no means proved, that the vermis of the cerebellum has to do with what Edinger called the statotonus; that is, the development of such tonic influences to the voluntary muscles as cause the body to be held erect in space. In disease of the vermis there is a disturbance of body balance and a tendency to fall, usually toward the side of the lesion. The direction of this tendency to fall is central in its origin and is not influenced by changes in the peripheral impulses. Thus a person who has a positive Romberg, falling to the right, as the result of a cerebellar tumor, will fall to the right irrespective of any changes in the position of his head. Furthermore, a spontaneous nystagmus often accompanies cerebellar lesions, and if this is present, the direction of the falling will not of necessity be to the side of the slow component. What has been said regarding the tendency to fall applies equally to the deviations of the extremities.

So that, with regard to their influence on voluntary movements, the chief differential point between cerebellar lesions and vestibular lesions lies in the fact that in the former the falling and the deviations of the extremities are central in origin and their direction is not influenced by changes in the peripheral or afferent cerebellar impulses, whereas in the latter, changes in these peripheral impulses, aroused by changes in the position of the head, cause alterations in the direction of both the falling and the deviations.

With cerebellar lesions, in addition to spontaneous falling and deviations of the extremities, there may be a loss of the reaction movements which occur normally in response to artificially aroused vestibular impulses.

The response to functional tests in the presence of labyrinthine suppuration, that is, the loss of hearing, the loss of reaction to the caloric, rotation and fistula tests with the spontaneous nystagmus, etc., are so familiar that they require merely mention here. I dare say that all those who have performed the functional tests of the static labyrinth in the presence of cerebellar tumors or abscesses have seen the so-called enduring nystagmus. With cerebellar lesions a caloric nystagmus directed to the side of the lesion frequently lasts much longer than the normal two and one half or three minutes. This phenomenon is believed to be due to the loss of the inhibitory influence of the cerebellum on the vestibular centers. In two cases in which large hernias of the cerebellum occurred after decompression operations in the posterior fossa I attempted by firm pressure on the hernia, after the manner described by Bárány, to influence the duration of the caloric nystagmus directed to the affected side. In one of these I was successful, but in the other I failed, the nystagmus lasting the normal two or two and one half minutes.

I have purposely left for the end of this paper the consideration of the spontaneous nystagmus which sometimes accompanies cerebellar disease. As the result of our experience in the intervening time Dr. Braun and I, in our book on cerebellar abscess recently published, have reiterated a statement made about two years ago in a paper read before the neurologic section of the New York Academy of Medicine, namely, that the nystagmus of central origin often cannot be differentiated clinically from that due to labyrinthine disease. We have been unable to recognize any essential difference between the nystagmus of central origin and that due to disease of the labyrinth or vestibular nerve. That there are minor differences is evident. Grey, in his report of cerebellar cases from the Peter Bent Brigham Hospital, although agreeing in the main with the statement above, calls attention to the fact that in their experience the nystagmic movements are coarser with subtentorial lesions. It is true they are often more like the caloric nystagmus which one sees in the blind. With acute diffuse labyrinthitis the nystagmus is almost invariably directed to the opposite side. With cerebellar lesions the direction of the nystagmus may vary at different times. Neumann has shown that this occurs with cerebellar abscess. With tumors the direction of the nystagmus may vary sometimes with changes in the position of the head. Furthermore, with tumors it is more common to observe a nystagmus in the anteroposterior vertical plane. I have never seen this with vestibular lesions. But in the fact that it is a rhythmic movement of both eyes and in the planes in which these movements occur with the exception cited above, the nystagmus of central

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origin is essentially identical with that of peripheral origin.

There is, however, a considerable difference in the behavior of the two. The nystagmus with diffuse labyrinthine disease grows appreciably less in intensity from day to day, while that of central origin remains the same or may even increase in intensity.

Finally the attempt to consider the nystagmus of central origin as an oscillation, an asynergia to be differentiated from that of peripheral origin by the fact that in the latter the eye movements decrease on fixation of the vision, is not borne out by our experience. We have but recently seen a circumscribed labyrinthitis, a diffuse labyrinthitis and a fracture through the labyrinth, in all of which the spontaneous nystagmus was definitely increased on fixing the vision on the index finger held close to the patient's nose, and while this is, in all probability, not the rule, it is, at all events, too frequent an occurrence to be useful as a means of differentiation.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. EAGLETON, PHILLIPS AND FRIESNER

DR. HORACE NEWHART, Minneapolis: I wish to emphasize the importance in all suppurative cases of making regular systematic examinations of the labyrinthine and cerebellar functions. By doing so we could undoubtedly reduce materially the mortality which exists with all endocranial complications of otitic origin. Take the statistics for cerebellar abscess. Unoperated, the mortality is practically 100 per cent., while the records of those best fitted to operate in such cases show a mortality of 40 per cent. Patients with cerebellar abscess too often come under observation in the latter stage of the manifest period, when interference cannot be expected to yield better results than those stated. But there is another group of cases, including the many chronic cases of temporal bone involvement, and the acute suppurative cases, if we were to apply to these our regular routine tests of the labyrinthine and cerebellar functions, we should gain some light as to what is going on within the cranial cavity, and by early operation might safely intervene before the appearance of a diffuse meningitis, with very appreciable reduction in mortality. Of great assistance in making a diagnosis of endocranial complications are the results of ophthalmoscopic and ocular examinations. Alexander, Neumann and O. Ruttin stated that in at least 50 per cent. of cases of cerebellar involvement originating in the labyrinth there are changes in the fundus. These changes are not always marked; only in the later stages, with decided increased endocranial pressure, is there a true choked disk. But the distinct alteration of the retinal vessels, usually unilateral and corresponding to the side involved, are sufficiently constant to be of diagnostic value. Disturbances arising from increased pressure affecting the cranial nerves come relatively late, but it is not unusual to find a diplopia with cerebellar abscess. In three cases coming under observation during the past six months, all terminating fatally, from several days to two weeks before a diagnosis of a terminal meningitis was made, the patient had complained of distinct throat symptoms with painful deglutition, and this without any discoverable lesion of the throat. This suggests somewhat the possibility of very early bulbar irritation associated with these cases of endocranial complication in the posterior fossa.

DR. ISAAC H. JONES, Philadelphia: A woman was referred to me with a diagnosis of tumor of the right cerebellar hemisphere. It was evident that either the ear tests were incorrect or there was nothing the matter intracranially. The right ear responded poorly; douching the left with both hot and cold water showed normal nystagmus and normal past-pointing in both directions, suggesting normal brain stem and cerebellum. Operation was postponed, she became perfectly well, has had a baby and has remained in perfect health ever since. Unquestionably it was a labyrinthitis and not brain tumor. A man getting off a train has a sudden explosive sound in his ear, falls to the platform, is dizzy and sick in bed for a week. Right ear is stone deaf, static and cochlear; Wassermann markedly positive. Could anything be simpler to diagnose—destruction of the labyrinth? But it was nothing of the sort, it was a beginning acoustic tumor. Later he showed spontaneous vertical nystagmus upward, which together with absence of responses from one ear make the diagnosis of cerebellopontile angle tumor with pressure on the brain stem. Necropsy showed cerebellopontile angle cyst. Man, neurologic diagnosis, right frontal tumor; ear tests suggested left cerebellopontile angle tumor. However, they operated in the right frontal region. Necropsy showed left cerebellopontile angle tumor. An apparently healthy man with headache showed normal labyrinths and eighth nerves and yet the vertical canals failed to produce any responses; horizontal canals produced normal nystagmus but no vertigo. This phenomenon-complex indicated pressure within the fourth ventricle; this diagnosis appeared ridiculous because the man seemed in such perfect health. That night he was rushed to the hospital unconscious; next day he regained consciousness but complained of agonizing headache. Many physicians and neurologists pronounced it hysteria. We stuck to our conviction of an organic lesion in the fourth ventricle. Necropsy three days later showed abscess in the fourth ventricle. Internal hydrocephalus shows absence of reaction from vertical canals and impaired vertigo from horizontal canals. Our operative and postmortem findings suggest that the horizontal canal fibers are confined to the medulla and inferior cerebellar peduncle, whereas vertical canal fibers traverse the pons and middle cerebellar peduncle. Cerebellopontile angle tumor shows (1) "Crossed" past-pointing; both arms point inward or both arms point outward regardless of type of stimulation. (2) Not only is there total absence of reaction from ear on the side of tumor but vertical canals of opposite ear fail to produce responses, whereas horizontal canal of opposite ear gives normal reactions. This is due to pressure on the pons involving vertical canal fibers from opposite ear. In one case a decompression was done and then stimulation of the opposite side gave normal responses, showing clearly that pressure had been removed from the vertical canal fibers.

DR. J. HOLINGER, Chicago: It seems to me that we have become too sanguine by the results of the examination of the static labyrinth, and are prone to forget the examination of the ear by means of the speculum and tuning forks. The statistics of brain tumors show that tumors of the acoustic nerve are not very rare, yet they are rarely diagnosed. Tumors of the acoustic nerve are only discovered at the necropsy. As to a division of the nerve supplies of the horizontal and the vertical semicircular canals, the same is true of the vestibular and cochlear nerves. This division may also give us pointers in trying to locate a tumor, as well as the division of the nerve supply of the horizontal from vertical canals. All of these points are equally important in fractures of the base of the skull, and in locating a blood-clot. The following incident may be of interest: Last December I saw a patient who had had a fall on a slippery sidewalk, after which he got up and walked home. A few days later he became drowsy. When I examined him his mind was not clear, but he still reacted to some questions, slowly and loudly put, and several times repeated. The examination by means of speculum and tuning fork allowed me to make a diagnosis of fracture of the base, running from the external canal of the right ear, crossing the pyramid of the temporal bone and following the course of the eustachian tube. Meningitis; caloric test was contraindicated; the fluid might have gone into the skull cavity. Three days later the patient died, and I was requested by the coroner's jury to hand in a report independent of the coroner's postmortem report. A colleague who followed the whole proceedings told me afterward that my description of the fracture was more accurate than the coroner's.

DR. GEORGE W. MACKENZIE, Philadelphia: I wish to endorse practically everything Dr. Eagleton said, particularly

with reference to the early symptoms that are possible of solution by careful otologic examination in cases of brain tumor long before there are symptoms of marked intracranial pressure, and, too, in reference to basal fractures. In cases of basal fracture, Bezoldt found that one fourth of the fractures involve the temporal bone. A basal fracture may involve the middle ear alone, the internal ear alone, or both combined. In a case of basal fracture involving the middle ear alone, functional tests disclose the typical findings of involvement of the conducting apparatus. When the inner ear is involved, there are the typical findings of a disease of the perceiving apparatus; furthermore, when the inner ear is involved, the facial nerve is usually involved with it. It is important in all cases of basal fracture, therefore, to make a careful examination of the hearing function as well as the static function, since it gives us an important guide as to the prognosis and method of operation to be followed. I recall one instance in which a general surgeon removed the stirrup in a case of fracture of the tegmen tympani, causing a pronounced deafness that would not have followed had the stirrup been left alone. On the other hand, there are many cases of fracture through the labyrinth in which operation could be done successfully which are allowed to go on to meningitis and death simply through neglect to operate. I believe all fractures involving the base should be examined carefully by the otologist and in case the temporal bone is involved, I would urge that the otologist perform the operation rather than leave it to the general surgeon. I also want to mention a case in which I had diagnosed a tumor of the internal auditory canal, involving the seventh and eighth nerves. I suggested the diagnosis of cysticercus, because the man had lived among dogs all his life. In the decompression operation done later by a general surgeon, a great portion of the occipital bone was removed and the tumor not reached. The patient died a short time after from shock. The postmortem examination proved the correctness of my diagnosis. Had this patient been operated on by an otologist following the method of removal of the labyrinth, slightly modified, the results would have been more favorable. My plea is for accuracy in methods of examination, using what knowledge we have concerning the functions of the inner ear and their deviations from the normal when they are involved. One of the gentlemen mentioned that a patient had a nystagmus to both sides. There is no lesion of the vestibular apparatus or cerebellum that can produce a nystagmus to both sides. When such findings are recorded, it is because of a mistaken observation. Nystagmus of reflex origin is always in one definite plane and direction and should be observed with the patient looking straight ahead while the eyes are in a condition of rest. When we record our observations in nystagmus in the side positions, we are bringing in an additional factor which has nothing whatever to do with the reflex.

DR. LEWIS FISHER, Philadelphia: In the analysis of cases showing vestibular symptoms, in order to get as clear a conception of this subject as possible, we attempt to visualize the anatomy of the parts concerned. We believe that the vestibular apparatus starts at the internal ear, and is connected with the various portions of the central nervous system by means of nerve paths. The internal ear, however, is by far the most important portion of this vestibular apparatus. Disturbances in equilibration cannot occur unless there is interference with this vestibular apparatus at some point. The same can be said of nystagmus: it can occur only when there is disease along the fibers which run to the eye muscles producing nystagmus. We try to remember that in the internal ear as well as in the eighth nerve, apart from the acoustic fibers, there also run two other sets of fibers, one set to the eye muscles producing nystagmus, and another to the cerebral cortex, producing dizziness. But these paths do not run together all the way; in the brain stem they part company. The nystagmus fibers run to the eye muscles, while the fibers carrying the vertigo stimuli have the cerebellum as their first objective point. These paths are different for the two sets of canals. The horizontal canal fibers enter the cerebellar nuclei by way of the restiform body, and from there, leaving by way of the superior cerebellar peduncles, go to the temporal lobes of the cerebrum. The vertical canal fibers continue higher up in the brain stem and enter the cerebellum by way of the middle cerebellar peduncle. There is always an inseparable association in the minds of authors between nystagmus and past-pointing. Bárány in his writings says that certain deviations in pointing occur in relation to either one component of the nystagmus or the other. This is to be greatly regretted. We have shown by experiments at the University of Pennsylvania that the slow component of the nystagmus has absolutely nothing to do with the dizziness and past-pointing that we are able to induce in patients by stimulating the labyrinth. When such a relation appears it is simply a coincident. Thus: The rule as generally postulated, namely, that the past-pointing is in a direction opposite to that of the nystagmus, is not correct, for we have shown that if an individual is turned to the right with the head back, the resulting nystagmus is to the right, but the past-pointing is also to the right, and we believe that this subject could be greatly simplified if this differentiation between the two reactions were more generally understood. In cerebral abscess, or tumor of the brain stem, or of any portion of the brain all the vestibular phenomena are produced either by irritation or by destruction of some of the vestibular fibers. In patients exhibiting such vestibular disturbances only a careful examination of the ear can tell us whether the disturbance is in the labyrinth and eighth nerve or whether it is intracranial. If in the latter, we are able to tell just where within the cranium these pathways have been interfered with. For example, if in a case presenting vestibular symptoms we are able to produce nystagmus but no vertigo with past-pointing, we know that the disturbance must be in the vertigo pathways between the cerebellar peduncles and temporal lobes. If, on the other hand, we stimulate the labyrinth and are able to produce dizziness with past-pointing but no nystagmus, then the interruption must be either in the pons or medulla oblongata. Generally speaking, a careful examination of both labyrinths, and especially of each canal separately, enables us to test the integrity of the different pathways and locate lesions with considerable accuracy.

DR. CHESTER C. COTT, Buffalo: Tumors which press on the auditory nerve or involve this nerve in its growth often cause a sudden onset of symptoms. This is due to the fact that the resistance of the nerve is suddenly overcome. Before the onset of severe symptoms an examination would reveal cochlear nerve degeneration. Later there occurs a severe attack of dizziness very likely following a trauma which the patient usually ascribes as the cause.

DR. ISIDORE FRIESNER, New York: In addition to the anatomic reasons for the priority of auditory symptoms in tumors not only of the cerebellum or pons, but also of the nerve, we must not forget that there is a very marked difference in the viability—and conversely in the destructibility—of the two branches of the eighth nerve. Not only is this true as far as the nerve trunk itself is concerned when subjected to pressure or involvement by a tumor mass, but Alexander has shown, from the examination of labyrinths which were subject to suppurative process, that this difference extends completely throughout the labyrinth itself. For instance, the hairs, which are biologically distinct from the hair cells, show a difference in viability when they are subjected to the presence of pus in the intralabyrinthine cavities. So with the tumor which involves, as far as its gross structures are concerned, the auditory and vestibular nerves equally, the primary disturbance will be in the auditory function—tinnitus or deafness. Furthermore, there have been reported numerous cases in which in addition to the eighth the facial nerve was involved, and yet there was no paresis. So that in the order of their susceptibility we consider the auditory nerve, but second the vestibular, and last, the facial. In regard to nystagmus to both sides, it is true that in many of these cases the nystagmus movements are more marked to one side than to the other. With brain tumors, however, I have seen a vertical nystagmus directed not

only upward but also downward. Of course this cannot be a physiologic nystagmus. It is a rhythmic movement of both eyes, and if we do not call this nystagmus both upward and downward, I do not know what we should call it.

DR. WELLS P. EAGLETON, Newark, N. J.: We have all seen cases in which the otologists should be called in. Our general hospitals are crowded with otologic cases. Every neurologic ward has its otologic problems, and we could give great assistance there, if we could see the patients in time to make an early diagnosis.

THE FATE OF PHENOLSULPHONEPHTHALEIN WHEN INJECTED INTO THE ANIMAL ORGANISM

FACTORS OTHER THAN THE KIDNEY INFLUENCING ITS "RETENTION": PRELIMINARY REPORT *

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During the past few months I have been engaged in a study of the physiologic action of the thyroid. The general scheme followed has been to treat dogs with a continuous injection[1] of amino acids, sugars and other substances in conjunction with the injection of the active constituent of the thyroid, and to study the effect of the thyroid on the metabolism of the animals. Some animals respond vigorously, the injection of the thyroid constituent producing very high pulse rate and a great increase in the respiration, accompanied by an extremely severe general tetany and terminating in a temperature which occasionally reaches as high as 112. It was soon found that all animals can be divided into two classes, those which give this reaction and those which do not.

For certain reasons it seemed probable that the condition of the animal could be foretold by the use of some substance which would be a criterion prior to the injection of the thyroid hormone. Phenolsulphonephthalein was used for such a test and a few trials demonstrated that in those animals which had a high phenolsulphonephthalein retention, little or no effect was produced by the injection of the thyroid; and in those animals having a low phenolsulphonephthalein retention a vigorous response to the thyroid might be expected. The administration of the phenolsulphonephthalein was changed somewhat from the usual procedure, and 1 c.c. per hour of the standard solution (6 mg.) was injected continuously during the entire experiment. By taking samples of the urine every fifteen or thirty minutes, the exact condition of the animal could be closely followed. At first it seemed that the type of metabolism going on had some influence on the amount of phenolsulphonephthalein excreted. With a constant injection of glucose we have recovered as high as 98 per cent. of the phenolsulphonephthalein injected. This high return was not momentary but continued for several hours. When a dog was injected with amino acids it was found that a rather low phenolsulphonephthalein output resulted, and in one instance a maximum excretion of 47 per cent. was found. In a second animal the maximum was 52 per cent. As it seemed probable that the type of metabolism going on in the animal was one factor controlling the output of phenolsulphonephthalein, we were greatly surprised to find that on the injection of amino acids in a third dog the phenolsulphonephthalein output ranged from 80 to 86 per cent. for many hours. It was necessary, therefore, to go further back for an explanation of the phenolsulphonephthalein retention.

In order to determine whether the phenolsulphonephthalein was absorbed and held in the tissues, the dogs were killed and their organs examined for phenolsulphonephthalein. In no case were we able to recover any of the dye except slight traces in the blood. Phenolsulphonephthalein retention, therefore, assumed a new aspect; that is, phenolsulphonephthalein retention really means phenolsulphonephthalein destruction. The possible mechanism of the destruction of phenolsulphonephthalein may be, first, the hydrolytic cleavage of the substance; second, the oxidation of the compound, and third, reduction.

The first is improbable because it is unlikely that there is a specific enzyme in the body which will accomplish it. When an attempt was made to oxidize phenolsulphonephthalein with hydrogen peroxid, it was found to be extremely resistant. A similar trial with nascent hydrogen showed that it is easily reduced. It thus seemed probable that phenolsulphonephthalein in the body is destroyed by reduction. In order to establish this point a dog was killed, its various organs ground to a fine mash, and 1 c.c. of phenolsulphonephthalein was mixed with the tissues. After standing some hours the amount of phenolsulphonephthalein destroyed was determined. It was found that muscle and intestine destroyed a large percentage, that the liver destroyed practically 100 per cent., and that the spleen, pancreas, lung and kidney destroyed almost none.

If the destruction of phenolsulphonephthalein in the tissues is caused by its reduction, the presence of an oxidizing atmosphere should prevent the destruction of the dye. To show this a liver mash was mixed with phenolsulphonephthalein, one portion was covered with liquid petrolatum to exclude oxygen, a second was left exposed to the air, and through a third portion air was bubbled. In the portion in which no oxygen was present, the phenolsulphonephthalein was totally destroyed; in the dish standing open, a large percentage, but not all, was destroyed; and in the portion through which air was bubbled, only a portion of the phenolsulphonephthalein was destroyed. Blood both in the oxidized and reduced form will not destroy phenolsulphonephthalein. Its destruction in the tissues is caused by a more powerful reducing action than that of completely reduced hemoglobin. Since blood is the carrier of oxygen in the body, it seemed probable that there would be a difference in the destruction of phenolsulphonephthalein by a perfused liver if the blood in the perfusing fluid was oxygenated or reduced. In the presence of oxygenated defibrinated blood, as much as 80 per cent. may be recovered after perfusion of a liver. In contrast to this, 95 per cent. of the phenolsulphonephthalein perfused through a kidney was recovered, although reduced hemoglobin was used.

These experiments have been confirmed and enlarged with the object of showing the presence of an enzyme in the tissue which is capable of exerting a very strong reducing action. It is not probable, however, that this enzyme acts on the phenolsulphonephthalein itself. Phenolsulphonephthalein is not affected by mild reducing agents such as hydrogen sulphid, sulphurous acid,

* From the Mayo Clinic.
* Presented before the Interurban Clinical Society, Rochester, Minn., Dec. 8, 1916.
1. Woodyatt, R. T.; Sansum, W. D., and Wilder, R. M.: Prolonged and Accurately Timed Intravenous Injections of Sugar, THE JOURNAL A. M. A., Dec. 11, 1915, pp. 2067-2070.

ammonium polysulphid and formaldehyd, and apparently will not react except with nascent hydrogen itself. The presence of reducing enzymes in plant and animal tissues has long been known, and the fact that phenolsulphonephthalein is apparently reduced only by nascent hydrogen and is destroyed in the animal organism furnishes grounds for ready speculation concerning the possibility that hydrogen is produced by the tissues of the body. If hydrogen itself is not produced, there is at any rate a most powerful reducing substance. The reducing action appears to proceed according to the laws generally followed by enzymes; that is, it is destroyed by heat, and its activity is greatly influenced by minute amounts of acid and alkali and also by the presence of sugars and other materials. The fact I wish to emphasize is that this enzyme continues to exert reducing action both in the presence and in the absence of oxygen. Is it not probable that a primary step in metabolism is a reduction with the production of hydrogen which then reacts with hemoglobin? If the supply of oxygen from hemoglobin is adequate for the reducing action of the cells, then phenolsulphonephthalein can no longer be reduced, as it is protected by an excess of oxygen. However, if the reducing action of the cells is greater than can be satisfied by the oxygen from the hemoglobin, phenolsulphonephthalein is reduced. Fundamentally, therefore, what the phenolsulphonephthalein tests show is the ratio between the rate of reduction and the supply of oxygen in the body. Just what the phenolsulphonephthalein shows in any particular case obviously depends on so many factors that it is impossible to localize all the effects in any one organ.

RESULTS OF TESTS

Tissue	Amt. Gm.	Cc.	Treatment	Phenolsulphonephthalein Recovered Per cent.
Sheep's liver	50	1	Undiluted + liquid petrolatum	0
Sheep's liver	50	1	Undiluted; exposed to air	Trace
Sheep's liver	50	1	150 c.c. 0.8% NaCl + liquid petrolatum	47
Sheep's liver	50	1	150 c.c. 0.8% NaCl; exposed to air	78
Sheep's liver	50	1	150 c.c. 0.8% NaCl; aerated	90
Human liver	25	1	40 c.c. 0.8% NaCl	10
Human liver	25	1	39.5 c.c. 0.8% NaCl + 0.5 c.c. 3% H_2O_2	30
Human liver	25	1	35 c.c. 0.8% NaCl + 5 c.c. 3% H_2O_2	30
Human liver	25	1	25 c.c. 0.8% NaCl + 15 c.c. 3% H_2O_2	44
Human liver	25	1	40 c.c. 0.8% NaCl + 0.5 gm. glucose	9
Human liver	25	1	40 c.c. 0.8% NaCl + 5 gm. glucose	20
Human liver	25	1	40 c.c. 0.8% NaCl + 15 gm. glucose	33
Human liver	25	1	39.5 c.c. 0.8% NaCl + 0.5 c.c. n/10 NaOH	11
Human liver	25	1	35 c.c. 0.8% NaCl + 5 c.c. n/10 NaOH	25
Human liver	25	1	25 c.c. 0.8% NaCl + 15 c.c. n/10 NaOH	77
Human liver	25	1	40 c.c. 0.8% NaCl + boiling	100*
Human liver	25	1	40 c.c. 0.8% NaCl; allowed to become putrid by standing 4 days	30†
Human kidney	25	1	40 c.c. 0.8% NaCl	90
Human kidney	25	1	39.5 c.c. 0.8% NaCl + 0.5 c.c. 3% H_2O_2	90
Human kidney	25	1	35 c.c. 0.8% NaCl + 5 c.c. 3% H_2O_2	94
Human kidney	25	1	25 c.c. 0.8% NaCl + 15 c.c. 3% H_2O_2	90
Human kidney	25	1	40 c.c. 0.8% NaCl + 0.5 gm. glucose	96
Human kidney	25	1	40 c.c. 0.8% NaCl + 5 gm. glucose	90
Human kidney	25	1	40 c.c. 0.8% NaCl + 15 gm. glucose	94
Cat's blood	50	1	Perfused through liver for 30 min. before addition of phenolsulphonephthalein	100‡
Dog's blood	50	1	Aerated with CO for 15 hours	95-96
Cat's blood and liver	whole	1	Blood perfused through liver 2 hours	45
Cat's blood and kidneys	whole	1	Blood perfused through kidneys 2½ hours	95
Rabbit liver	32	1	64 c.c. 0.8% NaCl + 0.25 gm. glucose	79
Monkey liver	26	1	50 c.c. 0.8% NaCl + 0.25 gm. glucose	39
Beef liver	30	1	Undiluted at 5 C.	52
Beef liver	30	1	Undiluted at 25 C.	33
Beef liver	30	1	Undiluted at 35 C.	26
Beef liver	30	1	Undiluted at 25 C. + 0.5 gm. glucose	25
Beef pancreas	30	1	Undiluted	82
Cat's muscle	25	1	Undiluted mash	38
Cat's intestine	25	1	Undiluted mash	34
Cat's liver	25	1	Undiluted mash	0
Sheep's spleen	50	1	Undiluted mash	90

* Enzyme entirely destroyed.
† Enzyme partially destroyed.
‡ Blood + phenolsulphonephthalein stood, 30 hours.

The presence of a slight acidosis increases the capacity of the tissues for absorption so that they will retain the dye so firmly that it cannot be washed out with physiologic salt. The addition of a small amount of sodium carbonate will counteract this, and physiologic salt will then remove the dye from the tissues. Furthermore, in the presence of an increase in the hydrogen ion concentration, the action of the enzyme is apparently more vigorous, resulting in greater destruction of phenolsulphonephthalein. Acidosis is not controlled by any one organ, but is a condition which may result from many causes. That it plays its part in the destruction of phenolsulphonephthalein cannot be doubted. Another great factor is the rate of the circulation of the blood. If for any reason the blood passes through the tissues at a slightly diminished rate, the amount of oxygen supplied to the tissues is reduced and the excess necessary to protect phenolsulphonephthalein from destruction is no longer present; thus a greater destruction of the dye results. Another factor would be a condition of anemia, in which the oxygen-carrying capacity of the blood is greatly reduced. Finally also the lungs must play an important part, as improper aeration of the blood would cause inability of the hemoglobin to furnish enough oxygen to protect the phenolsulphonephthalein from destruction. We have produced a drop in phenolsulphonephthalein output from 76 to 19 per cent. in an animal receiving a continuous injection of phenolsulphonephthalein, by simply interfering with its respiration. When the respiration was again normal, the output rose to 60 per cent. If the kidney does not readily pass the dye, it is returned to the circulation and the tissues have a prolonged action on it, resulting in great destruction.

There is one condition which I should like to mention in which this enzyme with its ability to produce extremely powerful reducing substances, if not nascent hydrogen itself, may play an important part. It seems highly probable that in uremia, when there is a condition in which phenolsulphonephthalein is reduced, other substances must be reduced, not directly by enzyme action but by the action of hydrogen or its substitute. Such reduction going on constantly within the tissues of the body is at least theoretically capable of producing compounds which normally could not be present; and to these compounds originating within the organism itself we may attribute some of the clinical symptoms.

For the treatment of blood, tissues and other bodily fluids so that a phenolsulphonephthalein test may be made, a method somewhat similar to one already described has been used.[2] The material to be tested is made to some definite volume and placed in a beaker. From 10 to 15 c.c. of concentrated ammonia are added, and from 5 to 10 gm. of calcium chlorid. The solution is then boiled. The calcium precipitates the proteins, and this precipitation, in the presence of ammonia, leaves the dye in solution. If there is a slight opalescence following this treatment, it has been found that the addition of ammonium phosphate, which will precipitate calcium phosphate, will remove the last traces of turbidity and leave a solution which can be accurately matched with the standard. The water is allowed to boil off until somewhat below the original volume. The solution and precipitate are returned to the original measuring vessel, cooled, made up to the original volume and filtered.

2. Rowntree, L. G.; Hurwitz, S. H., and Bloomfield, A. L.: An Experimental and Clinical Study of the Value of Phenoltetrachlorphthalein as a Test for Hepatic Function, Bull. Johns Hopkins Hosp., 1913, **24**, 327-342. Whipple, G. H.; Peightal, T. P., and Clark, A. H.: Tests for Hepatic Function and Diseases Under Experimental Conditions: Phenoltetrachlorphthalein, ibid., 1913, **24**, 343-357.

In the tests recorded in the accompanying table, the same procedure was followed throughout. The finely ground tissue was mixed with 1 c.c. of standard phenolsulphonephthalein solution and allowed to stand undiluted or diluted with physiologic salt and other additions, as shown. The solutions were preserved with toluene, and bacterial action can be ruled out as a possible factor of the destruction. Dilution appears to influence greatly the amount of phenolsulphonephthalein reduced, probably by simply diluting the concentration of the substance reducing the phenolsulphonephthalein. Another factor which may be of influence here is the diminished activity of the diluted solution. The partial destruction of the enzyme by simply allowing the liver mash to stand in the laboratory until in a putrid condition is of interest. Although there is no doubt about the presence of bacteria in this case, and although bubbles of gas were being given off by the solution, the destruction of phenolsulphonephthalein was much less than before the liver had become decayed. This loss of action when the tissue became decayed suggests that the reducing enzyme is more active in living functioning cells, and that the destruction of phenolsulphonephthalein in these experiments and in the body is not caused by the degenerative processes going on in dead cells. Whether or not the favoring action of glucose on the destruction of phenolsulphonephthalein is of significance is not now certain; but it is of interest to note that the solution causing the greatest destruction of phenolsulphonephthalein contained small amounts of glucose.

STERILITY STUDIES

WITH PARTICULAR REFERENCE TO WEAK SPERMATOZOA; DIAGNOSIS AND TREATMENT *

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To satisfactorily diagnose and treat sterility it is essential that it be considered a dual problem, involving both the husband and wife. At the present time there is a marked lack of cooperation between gynecologists and genito-urinary surgeons in the diagnosis and treatment of this type of patients. There are types of sterility which are definitely due to the male; there are also types, fewer in number, however, and much harder to diagnose, that are definitely due to the female, and there is a large class of patients who come stating that the wife has been examined and nothing can be found and the husband has been examined with a negative result, but no children appear. This type of case has, up to the present, been attributed to the woman, but on very insufficient evidence. Evidently something is wrong somewhere; hence my plea is that these cases should be undertaken at least with very marked and close cooperation between the different men, or one man should qualify himself sufficiently to work out these cases alone. In determining the cause of sterility of a given couple it should be considered under the following heads:

1. Obstructions in the sexual tract of the male.
2. Obstructions in the sexual tract of the female.
3. Absolute failure of, or imperfect development of, the essential male elements.
4. Absolute failure of, or imperfect development of, the essential female elements.
5. Alterations in the secretions of the female sexual tract so that her secretions are destructive to the life of the spermatozoa.

Obstructions in the Male Generative Tract: This class of cases is easily diagnosed as they discharge a semen with complete absence of spermatozoa. The only treatment for these obstruction cases is surgery, with removal or anastomosis around the obstruction. What particular operation is necessary to be performed depends on the location of the obstruction. The possible operations are vaso-epididymostomy, either with the vas and epididymis of the same side or the vas and epididymis of opposite sides; Lespinasse sac operation, resection of the vas and end to end union with the vas on the same side or with the vas on the opposite side. Urethral obstructions should receive appropriate dilatation or operation.

Obstructions in the Female Sexual Tract: There are two places in the female tract where obstructions are likely to occur, namely, the tubes and the cervix. Tubal obstructions can be definitely diagnosed by laparotomy and catheterization of the tubes. If this is not considered feasible the diagnosis must be made by inference either by a history of some pelvic disease likely to produce adhesions or (after determining that the husband has a normal sperm) by the recovery of motile sperm from the uterine fundus several hours after coitus. To aid us in recovering sperm from the fundus it is advisable to do a direct uterine insemination and from four to twenty-four hours later examine the uterine secretions for living sperm. If the sperm are actively motile we infer that the cause of the sterility is either tubal obstruction or a defect of ovulation. Cervical obstructions can be cured by direct uterine insemination easier than by operation directly on the cervix, as these obstructions are slight and do not prevent the passage of the impregnating catheter. No doubt there are cases in which it will not pass, but they are extremely rare.

Absolute Failure of, or Imperfect Development of, the Essential Male Elements: This is the type of case that I particularly wish to call to your attention and to study carefully. Semen is easily obtained and should be carefully studied, not only as to spermatozoa, but as to all the other elements as well. Pus is present occasionally and there are marked differences in the coagulating properties of the semen of different men, although sterile semen shows much less coagulating power than nonsterile. The spermatozoa deserve special study. The function of spermatogenesis is one of the highest and most differentiated of bodily functions. It is quite complicated and hence one would expect to find many defects and abnormalities in its product (namely, spermatozoa).

Process of Spermatogenesis: Spermatogenesis is affected adversely by many things, particularly the Roentgen ray, also by environment and the state of health; in debilitated and weakened conditions spermatogenesis ceases or is markedly defective. Diet also has a great influence on the production of the spermatozoa and in animals the season is a very important factor. In man, however, there is no definite breeding season, as is proved by the fact that the same number of babies is born each month of the year. All these factors influence spermatogenesis in a destructive way. To influence spermatogenesis in

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

a constructive way, one should investigate all these factors and correct whatever is wrong with any of them. There is much clinical and experimental evidence that destruction of the pituitary, particularly the anterior lobe, causes a sexual nondevelopment; also that suprarenal tumors cause marked sexual precocity. From these data it has been considered worth while to give patients with absence of spermatozoa and no obstructive lesion, and with weak or imperfectly developed spermatozoa, desiccated anterior lobe of the pituitary and desiccated suprarenal gland, particularly the cortex. In three cases in which there was complete absence of spermatozoa with very small hard testicles, spermatozoa were not produced in the semen by this therapy. In one case, that of Mr. D., in which there were few spermatozoa, and what few were present had large heads and no motion, there was a marked improvement following the administration of 40 grains of anterior lobe of the pituitary and 12 grains of desiccated suprarenal daily for one week. The second week there was an improvement over the first week. The third week the conditions were the same as at the end of the second week. At the present time (six months) the condition is approximately normal as regards morphology; the spermatozoa are slightly decreased in number and the sperms have about one half to two thirds of the normal motility and have normal staining reactions. As a matter of fact most of our clinical examinations of semen consist simply of determining the presence or absence of spermatozoa; and if present, if they are motile, and do not include careful detailed examination of the rate of movement, morphology, staining reactions and structure of the sperm. Clinically these cases are of two types, the cases in which there is absolute failure of spermatogenesis and those that show defective spermatogenesis. The first type show azoospermia, but give no history of any testicular disease or injury and on examination show a small, hard testicle with a normal epididymis. I have treated these patients with dry anterior lobe of the pituitary and suprarenal cortex, but as yet these dried glands have failed of result. I now have one of these patients on six fresh glands daily to see if we can obtain a result with the fresh gland.

Early in this work with sterility I was struck with the number of cases presented in which both the husband and the wife stated that they had been examined and were all right. On reexamination it was found that the wife was gynecologically normal, but the semen of the husband contained sperm that on careful examination showed numerous defects. The motility was much reduced and in some was practically absent. The duration of the motility was materially shortened, from a normal of five to six hours down to a few minutes. The character of the motility was changed. In normal sperm one to two hours old practically every sperm has a progressive movement. In these specimens it was noted that many of the sperms had no motion at all, many had a lashing to and fro motion, but progressed very little, while a few only had a slow progressive movement taking as high as thirty-two seconds to cross the one sixth field with No. 1 eye piece, as compared to a normal of about eight or nine seconds. Likewise the morphology may be markedly altered. The following types of semen have been observed: 1. The heads may be about twice as large as normal and may take the pink of the Jenner stain; frequently the neck and tail stain blue. This picture is frequently given by sperm from the vagina one or two hours after intercourse. 2. There may be sperm with a U-shaped tail and normal head and always motionless. 3. We have the wryneck sperm usually with considerable motion. This type has been found in one of my sac cases practically constantly. 4. There may be a large head stained blue with a very thick neck piece and a short tail with slight motion.

Motility of the Sperm: In examining a specimen of semen as to the motility of the sperm there are several factors that should be considered: (1) the time that has elapsed since the semen was ejaculated; (2) the conditions under which it has been kept, and (3) the viscosity of the semen.

In a normal semen one to two hours old and kept either at body temperature or around 60 or 70 degrees practically every sperm should be motile; most of them will be progressing, some few will simply be moving in situ or making little progress. If the semen is markedly clotted, the progressive motion will be much slower, but the attempts at progression and the movement in situ will be very active. As time goes on and the clot thins, the progressive motion will become more and more active, so that a sperm that would take ten seconds to cross the one sixth field will cross it in from six to eight seconds. From now on one will notice more and more sperm that have ceased to progress, showing a backward and forward movement only, and even this motion gradually becomes less and less and finally ceases.

Coincidentally with these changes, the general rate of progressive movement lessens, and we have in the picture many motionless sperms, many moving in situ, and a few actively progressing. In from five to ten hours in normal cases, depending on external conditions, all movement ceases. In the specimens which I have considered to be weak spermatozoa, we find many absolutely motionless and at the end of from one to two hours some few only slightly moving, and a few that will have various grades of motion up to approximately the normal. In other words, the motility of the spermatozoa grades from normal to those that show absolutely no motion at all. The weakest case I have encountered with any movement at all was of spermatozoa which was absolutely motionless at the end of one hour after intercourse; at the end of one-half hour there was some slight motion and at the end of three quarters of an hour there was very slight motion. The semen in this case was examined many times and these conditions were always observed; careful account of the time of ejaculation was taken in each instance and the spermatozoa transported in an ideal and constant manner.

The normal rate of movement (always timing the fastest sperms) across the one sixth field No. 1 eye piece is as follows: In semen two and one-half hours old on a cold, rainy spring day at room temperature the speed was 6, 12, 8, 14, 6, 20, 8, 20, 16, 6, 8, 8, 26, 14, 10, 4, 8, 14, 12, 16 seconds. The same semen three hours and ten minutes old showed none motionless, few moving in situ, and the following speeds: 14, 18, 16, 19, 10, 18, 12, 14, 10, 12, 12, 10, 13, 16, 18, 16, 12, 14 seconds. The same semen five hours old shows many motionless sperms approximating one half as many just moving to and fro and not progressing and those that were progressing gave the following speeds: 18, 8, 15, 14, 14, 8, 18, 10, 11, 15, 12, 24, 22, 18, 18. The same semen nine and one-half hours old showed two sperms with their tails moving.

Cases Showing Decreased Motility: Mr. B., electrician, denied any testicular disease. Examination showed the semen deficient in coagulating properties and the spermatozoa took an average of twenty-three seconds to cross the field at one examination, thirty-two seconds in another.

Mr. D., first examination, showed a few spermatozoa with large heads and absolutely no motion. After taking pituitary gland for about one month examination five months later gave the following findings: Spermatozoa numerous, semen 8 c.c. in amount, specimen one and one-half hours old showed as the speeds of the spermatozoa 18, 36, 10, 14, 15; two hours old 12, 15, 10, 16, 18, 20. In four hours all motion had ceased. It was noted with each examination that there were many spermatozoa that were absolutely motionless.

Mr. T., millinery salesman, small man, not particularly robust. Semen one and one-half hours old showed slight coagulating properties. The spermatozoa took the following time to cross the field: 14, 26, 17, 28, 30 seconds.

I have noted that many of these cases of weak spermatozoa show slight malformations of the urethra and testicles, such as hypospadias and nondescended testicles of slight degree.

In this connection Cole's experiments with alcoholized sperm are of marked interest, namely, a female rabbit was bred to an alcoholized male and immediately afterward was bred to a normal male, using different breeds so that the young of the two males could be easily identified. All of the young born were from the normal male. When the alcoholized male was used alone, impregnation took place, evidently the alcohol diminished the motility of the spermatozoa, so that the normal spermatozoa reached and impregnated the ova before the alcoholized sperms arrived; but if the alcoholized ones were given time enough to reach the ova, they were capable of impregnation.

Absolute Failure of, or Imperfect Development of, the Essential Female Elements: We cannot obtain the ova for direct examination and can only infer from symptoms and signs that ovulation is lacking or imperfect. (See under diagnosis of tubal obstructions.) Defective development of the uterus can be determined by proper gynecologic examination.

Secretions: The normal secretions of the vagina are acid and the secretions of the cervix are alkaline. Secretions can affect the spermatozoa in two ways: either the normal secretions can be changed in such a manner that they are destructive to spermatozoa or the blood serum of the individual may be lytic for the particular spermatozoa that are introduced into the vagina, in the same manner that some blood hemolyzes other blood after the operation of direct transfusion.

Destructive secretions can be diagnosed by one of two methods: Huhner's cervical test, or by mixing the semen and the secretions from the vagina, cervix and uterine fundus on different slides and observing the motility of the spermatozoa from time to time. The cervical test is carried out as follows: The couple have intercourse in the normal manner and the wife comes to the office one hour afterward. Normally there should be motion in the spermatozoa in the vagina, which are protected from the direct action of the vaginal secretions by the coagulating properties of the semen. The spermatozoa that are intimately mixed with the vaginal secretions are practically always dead at this time. Spermatozoa at this time obtained from the cervix normally show very active motion. If the vaginal secretions are excessively destructive to the spermatozoa, or if the spermatozoa are weak and the secretions are normal at the end of one to two hours, most of the spermatozoa in the vagina are dead. To determine the lytic action of blood serum on the spermatozoa, simply mix the blood serum of the wife with the semen to be examined and observe the motility of the spermatozoa from time to time. Normally, motion should persist for several hours. Alien blood serum kills spermatozoa in a few minutes. In one of my cases blood serum of the wife killed the spermatozoa of the husband in a few moments, whereas controls in other serums showed the spermatozoa to move normally and other spermatozoa in the wife's serum moved for several hours. This patient was treated with antispermatoxic serum prepared after the method of Metchnikoff. As yet there has been no pregnancy. Excessive acidity of the vaginal secretion is treated by an alkaline douche or by direct uterine insemination.

Treatment of Weak Sperm Cases: As the vaginal secretions normally are quite destructive to spermatozoa and as the distance from the uterine fundus to the fallopian tube is much less than from the vagina to the tube it seems rational to think that if these weak spermatozoa were placed directly into the uterine fundus they would have a much better chance of reaching the ovum and impregnating it than if they are thrown free into the vagina, as in normal intercourse; consequently, the best treatment for these weak sperm cases is the direct injection of the spermatozoa (uncontaminated by mixture of vaginal secretions) into the uterine fundus. The best time to perform this operation is a few days before or a few days after the menstrual flow. If done before, time should be allowed for the spermatozoa to reach the fallopian tubes before the menstrual flow commences. If performed after the menses, the sooner after the cessation of the menstrual flow the better. For this procedure it is necessary to obtain the semen as free from bacterial contamination as possible; hence one instructs the husband to thoroughly wash the penis with soap and water and thoroughly clean the folds of the preputial cavity. The condom is rolled up and boiled and then applied to the penis. After intercourse the condom is removed, a knot tied in the top and it is placed in a Dewar flask, corked and brought to the office. In the Dewar flask the spermatozoa should be very actively motile at the end of two to three hours.

The patient is now placed on the table in Sims' position, the cervix pulled down, the impregnating catheter passed for a distance of 1¾ to 2 inches into the uterus and then from 0.1 to 0.5 c.c. of semen are injected into the uterine cavity. The catheter is withdrawn, the patient rests for ten or twenty minutes and then can get up and go home.

CONCLUSIONS

Many cases of sterility attributed to the woman are due to weak spermatozoa.

This type of case can be diagnosed by careful examination of the semen, as has been described in the foregoing.

The cause of sterility is as often in the male as in the female, if not oftener.

Treatment depends entirely on the cause.

Obstructive cases, male or female, are operative.

Weak sperm cases would indicate direct uterine insemination and glandular therapy, diet, modes of life, etc.

Secretion cases necessitate appropriate therapy to check or modify the destructive secretions.

Nonproduction of the essential elements, namely, spermatozoa or ova, would indicate glandular therapy.

ABSTRACT OF DISCUSSION

DR. W. C. QUINBY, Baltimore: We know little about the physicochemistry of spermatogenesis; and, as suggested, the question of the relation of the chemical environment to motility of the spermatozoon is a very important one. We may learn in the future that by changing either the reaction or the viscosity of the surrounding medium, it may be possible to prolong the life and activity of the spermatozoa. My own experience with sterility has been confined almost entirely to the mechanical or obstructive type, and I should like to mention, besides those obstructions which Dr. Lespinasse has outlined, some instances in which the obstruction to the seminal passages is either in the ampulla of the vas, or even possibly in the ejaculatory duct. I am sure that we are going to be able in the future to perform various plastic operations in these regions with a fair chance of restoring patency. In regard to weak motility of the spermatozoa, or their absence without previous disease as a cause, there is in the literature a great deal which speaks for the importance of the so-called ductless gland therapy. There have been several very suggestive observations in regard to infantilism in school boys. Some of the big English schools have been tabulated, and out of several thousand boys those showing tardy puberty were found to be very markedly benefited by the administration of thyroid extract. Its use is purely empirical, but in these cases thyroid extract caused descent of the testes and the normal development of those manifestations which we call the secondary sexual characteristics which had been lacking previously.

DR. H. L. SANFORD, Cleveland: I have not studied the pathology of the semen as thoroughly as has Dr. Lespinasse. I have done some plastic work on dogs, but I have never tried Dr. Lespinasse's sack operation. I would like to ask Dr. Lespinasse to give us a little of his technic of uterine insemination. I have tried it in several cases, and in two or three instances pregnancy has resulted. I do not know whether it was a result of my work or whether it was Providence.

DR. A. L. WOLBARST, New York: The genito-urinary man who is treating sterility in the male ought also to know something about the sterile woman in the case. That is to say, it is not enough to know that a man has sperm in his emission. He must have more than that. He must have a sperm that will survive the vaginal secretion, and that is one of the things we overlook when we examine a specimen in a condom. I have examined any number of specimens in condom, and while I find that the spermatozoa may be apparently normal, when I study that same spermatic secretion in the vagina of the woman, the behavior of those spermatozoa is very different. Spermatozoa may survive in a condom in a warm temperature for five, six or eight hours; and the spermatozoa of the same person, when the secretion is very acid, may not survive in the vagina more than half an hour or twenty minutes or ten minutes. They vary considerably. I examine the vaginal and cervical secretions before coitus in order to determine whether they are acid or alkaline, then I examine the spermatic secretion immediately after coitus, ten minutes after coitus, twenty minutes after coitus, and an hour after coitus, and the amount of information obtained in these cases is sometimes startling. You will sometimes find very active spermatozoa soon after they are deposited in the vagina, but within an hour the great majority are dead. The inference to be drawn is very clear, that the man is not at fault—or rather, to put it another way, his sperma are not at fault, because they are deposited in the wrong kind of vagina. I imagine that is why it happens that a man and woman may be sterile when living together, and then in subsequent marriages both the man and the woman may be fertile, because the spermatozoa are deposited in the proper soil. Just what effect the vaginal secretions have on the sperm is not clearly understood. Broadly speaking, a very acid vaginal secretion destroys the sperm, but how to make an acid vaginal secretion alkaline the gynecologists do not seem to know. They say if you will irrigate with sodium bicarbonate it will make the secretion of the vagina alkaline. I find that that is not at all effective. The vagina is not a test tube, any more than the male urethra is a test tube, and something must be done by the gynecologists to prepare the soil for the spermatozoa by restoring the acid vaginal secretion to its normal character. Probably in the normal case the spermatozoa have sufficient inherent vitality to overcome the hyperacid secretion, or better still, in the normal case they are deposited right in the mouth of the cervix and thereby escape the vaginal secretion entirely. In these weak cases their action must be accelerated by improving the secretion of the vagina. The second point that is often overlooked in connection with sterility is this: In doing the Martin operation of the epididymovasotomy we are apt to place too much dependence on the finding of the spermatozoa in the testicle. Assuming that you are ready to make your anastomosis, you will find very often that the vas deferens itself is choked up with cheesy secretion undefinable under the microscope, and which I understand Dr. Martin himself has observed but has been unable to determine the nature of. I have found the vas occluded so that it has been absolutely impossible for a fine filiform to pass into it for any appreciable distance. I do not know that this has ever been studied, nor do I know how it can be determined previous to operation. But I do know that in trying to pass a probe or in trying to inject argyrol from the point of anastomosis to the vesicles we fail because of this cheesy stuff, and at the point of incision you can scoop it out of the vas with a fine spoon. The thing to do in these cases would be to try to curet the vas deferens and empty it of this substance if it could be done.

DR. CHARLES M. MCKENNA, Chicago: The question raised by Dr. Wolbarst can be answered in the following manner: Strictures of the vas can be treated in the same way that strictures of the urethra are treated, viz., by dilation. This can be done by making a small incision in the vas below the external inguinal ring and passing a fine piano wire through the narrow portion of the vas until the vas has reached its normal capacity. If necessary the piano wire can be left in the vas from five to fourteen days. By this time, the lumen will be of normal size. I also believe that this same treatment can be carried out in strictures of the fallopian tube when the woman is sterile. I have sounded the fallopian tube and women have become pregnant afterward, while in the case of men, living spermatozoa have been found when they were sterile before.

DR. J. LELAND BOOGHER, St. Louis: Sir Henry Thompson fifty or seventy-five years ago succeeded in producing a living English lord by injecting the uterus of a woman after copulation. I believe it to be the duty of every genito-urinary man to examine the woman in these cases where sterility is pronounced and the desire for children is great. It is not always possible for the uterus to be in a position to receive the spermatozoa, even when they are living and motile, which depends on the prostatic secretion. Displacements of the uterus frequently prevent conception. Secretions are accumulated in the uterus that are antagonistic to the development and growth and inception of the spermatozoa.

DR. LOUIS E. SCHMIDT, Chicago: It is practically a weekly occurrence for me to see some one who is unable to have children. Only recently I have seen several individuals of unusual physique and manly appearance, with absolutely no history of venereal disease. In fact, they had never had intercourse previous to marriage. Both these gentlemen were examined by our foremost physicians previous to marriage and pronounced absolutely well and fit for marriage. I am under the impression that the general medical man does not take this functional condition into account. He simply looks them over in a general way, as far as medical matters are concerned, and advises the individual to get married. After he has been married a few years and there is no offspring there is always trouble. I can recall numerous instances like that. In connection with the examination of semen I am not in accord with the statement that, in the absence of spermatozoa, most of these cases will fall into the so-called obstructive type. I can recall offhand dozens

and dozens of cases in which I am absolutely positive no obstructive condition ever existed, and where the elements present were practically only prostatic in character. I am under the impression that in all those instances there is some change or some cause for the lack of formation of the spermatozoa, and in these cases up to the present time treatment of all kinds has been of no avail. For the past four or five years or longer I have tried these different methods, but with absolutely no sign of change in any of these cases.

DR. V. D. LESPINASSE, Chicago: In reply to Dr. Wolbarst I would say that the spermatozoa are protected from the vaginal secretion by the physiologic clotting of the semen, and not, I think, by any change in the reaction of the vaginal secretions. The semen deposited in the vagina clots around the cervix, forming a sort of cup around the os, and from there the spermatozoa get into the cervix and into the uterus. In cases in which the spermatozoa are intimately mixed with vaginal secretions the spermatozoa are killed quickly as a rule in one hour; but if you obtain a mass of semen and get the spermatozoa from the center, you will find that they will be normally motile even two or three hours after intercourse. The yellowish white material that I spoke of I have observed in the vas several times. The first time I saw it I thought it was normal sperm. It is very deceptive. When the vas is exposed it appears as if the vas was distended with normal sperm. When you put this material under the microscope you see little globules that look like fat, but they do not take the sudan III and osmic acid stain. Just before leaving Chicago yesterday I submitted some of my slides of this material to Prof. F. R. Zeit, and he was not willing to express an opinion as to the exact character of these globules. He would not say it was débris, but thought it was some degenerative product. When you find this material you can be sure there is an obstruction further down in the vas, and the material itself is not so thick but that it will come through on intercourse. In regard to the technic of uterine insemination, there are two or three points about it. The first is, you cannot inject very much into the uterus. The second is, you must use a very soft and very small catheter so that you can deposit not to exceed five or six minims, better about three, in the uterine fundus. If you do not have a small catheter you will not deposit any semen in the uterus or you will deposit too much, and the woman will have a very severe colic. Before insemination the presence and motility of the spermatozoa should be determined. We have tried to standardize this work on an hour. Let the couple have intercourse at home, and then get right up and come to the office. It is remarkable the difference in the motility of the sperm that you will find. Just recently I had a case in which I examined a woman who as a young girl had had a tuberculous peritonitis. She is a strong and healthy woman now. The husband is a healthy man with absolutely normally movable sperm. There was a striking difference in the motility of the sperm taken from the vagina and those taken from the cervix at the end of an hour. Those taken from the vagina were barely moving, while the cervical ones had an absolutely normal motility. One little by-product of this work is the length of time of pregnancy. We have had one baby now from this work, and the baby was born 280 days after the insemination, and that checks up with most of the literature of the cases in which they could check it from one intercourse—it runs from 270 to 290 days.

Need for Improvement in Care of Pregnant Women.—According to S. G. Moore (*Med. Press and Circular*, Nov. 15, 1916), who advocates the notification of pregnancy, mothers are dying in excessive numbers just as children died and still die in excessive numbers from preventable causes. The majority of them do not come under the care of a duly qualified and legally registered medical practitioner until their condition is desperate, and until the opportunity of taking measures to prevent catastrophe is overpast. Pregnancy cannot be concealed, and ought not to be concealed, whether it be legitimate or illegitimate, and since it cannot be concealed, what valid objection is there to comply with a provision which has for its sole and exclusive object the welfare of the woman and her baby?

THE OPERATIVE TREATMENT OF CRYPTORCHIDISM *

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The object of this communication is not to discuss the propriety of attempting to place the retained testicle in its proper place in the scrotum, but simply to describe in detail the method we employ to achieve this result. The operation is essentially that described by Bevan, but we feel that many of its details have never been thoroughly discussed, and it is our purpose to describe these. Such a description appears particularly opportune, since we are convinced that practically every testicle can be placed in the scrotum if the operation is carefully performed. Several recent publications describing series of cases of which as many as 30 per cent. have resulted in leaving the testicle within the abdominal cavity seem to call for some such detailed description.

Let us preface our description with a few statements that appear to us axiomatic, and on which we justify the employment of an operation.

1. The testicle retained within the abdomen is doubtless much more liable to teratomatous change than the normally situated testicle. The testicle retained in the inguinal region perhaps shows a similar though lesser liability to malignant disease.

2. Yet we find no evidence that the testicle which has been placed in the scrotum by operation is unusually subject to teratoma.

3. The retained testicle has often lost its spermatogenetic function either by congenital deformity and obliteration of the epididymal tube, or by atrophy of the spermatogenic elements in the testicle itself. Such atrophy is not likely to occur before puberty in an organ otherwise normal and with normal epididymis only.

4. Hence there is every reason to operate at about the time of puberty in order to forestall atrophy. If the operation discloses grave deformity and separation of the epididymis from the testicle, the occlusion of the duct may be taken for granted. Yet this is no reason for not proceeding with the operation, since the testicle is doubtless safer from teratomatous malignant change and is certainly more decorative when in the bottom of the scrotum.

5. Almost every retained testicle is associated with either clinical hernia or with a pouching of the peritoneum, which predisposes the patient to hernia. The operation thus indicated for the cure of hernia is somewhat prolonged but not gravely complicated by the effort to replace the testicle in the bottom of the scrotum.

6. The safety of the operation is attested not only by our own series of thirty-three operations with no deaths, but also by similar statistics from other authorities.

7. Unless operation is called for by grave hernia at an early age it is safer not to attempt the procedure much before puberty, for the vessels are so small and delicate that they are likely to be torn unless the operator is unusually expert.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

TECHNIC OF THE OPERATION

The skin incision is made as for inguinal hernia, extending obliquely from a point over the internal adbominal ring to a point about 1 inch below the external abdominal ring, the incision lying parallel to and about a finger's breadth above Poupart's ligament.

As in the operation for hernia the dissection is carried down to the external oblique aponeurosis, which is then split, thus opening the inguinal canal. Until this step has been made no attention is paid to the testicle, for any effort to free this is likely to result in mixing the operator up in a mass of adhesions.

The inguinal canal having been opened, the cremasteric fibers lying over the contents of the canal (cord, testicle, hernia) are picked up and divided between two thumb forceps.

Working within the fascial layer inside of the cremaster the contents of the cord are then separated and delivered as in the operation for hernia.

The hernial sac is now sought for, in the upper part of the canal if necessary, opened and separated by blunt dissection from the spermatic cord.

The testicle is now freed from the gubernaculum and other attachments below it, leaving it attached to the patient only by the spermatic cord.

Now comes the delicate part of the operation, the lengthening of the vas and vessels. In a minority of cases this can most readily be done by treating the spermatic cord as if one were about to operate for varicocele or for division of the vas. First, the muscular and fascial compartment in which the pampiniform plexus lies is incised longitudinally and the veins picked out. Then the smaller compartment, in which lies the vas with its vessels, is similarly opened and the vas picked out. The spermatic cord is now represented by three separate bundles, the pampiniform plexus, the vas and its vessels, and the musculofascial envelope. This last is divided and its ends carefully stripped back over the vessels and vas, the exuberant tissue being cut away. This dissection is carried with especial care up toward the abdominal cavity until the point is reached at which the vas distinctly separates in its intra-abdominal course from the pampiniform plexus. It will now usually be found that there is ample length of spermatic cord to permit the testicle to descend well into the bottom of the scrotum without any tension whatsoever.

Certain exceptions may be noted, however, as follows:

1. The younger the patient and the smaller the testicle, the less developed is the cord likely to be and the more intertwined with muscular and fascial fibers, so that in such cases (and they constitute the majority) it is impossible to make a clean separation of the vascular elements from the fascial capsule without tearing many and perhaps all of the vessels. It will be found in such cases that fascial separation by snipping may be made here and there along the vessels and that a great deal of slack may be obtained by separation within the abdomen.

2. If the testicle is originally found near the internal ring or within the abdomen, it is usually necessary to divide the pampiniform plexus, although atrophy will doubtless result from this, in order to bring the testicle down to the bottom of the scrotum.

3. If the testicle is at or near the external abdominal ring the slack obtained in the veins is usually greater than that obtained in the vas, so that there is no reason to divide the pampiniform plexus.

4. If, in spite of a deep dissection within the pelvis, the vas remains too short, about 1 cm. may be gained by displacing it to the inner side of the internal epigastric vessels. It has been suggested that the vessels be cut for this purpose, but we have found it perfectly feasible to perforate the fascia to the inner side of the internal epigastric vessels without cutting them, and to slip the testicle through the opening thus made. As far as we are aware no direct hernia has resulted from this procedure.

5. Retention of the arterial supply is of utmost importance, and it will sometimes be found that the artery of the vas short circuits, as it were, a loop of the vas itself, so that in order to save the vessel we must omit the unfolding of this loop.

6. In four cases all of the vascular supply of the testicle was apparently destroyed, only the vas remaining to connect it with the body. Yet in only one of these cases did sloughing result. The others were considerably atrophied already and there is no evidence that they atrophied any further.

The cord having thus been lengthened, the tunica vaginalis, which has doubtless already been opened, is inverted as for the operation of hydrocele.

With two fingers the scrotum is opened down to its very base for the purpose of receiving the testicle. This simple procedure would seem scarcely worth insisting on did we not know that one of the most experienced hernia operators in New York City has confessed that he has in the past placed almost 50 per cent. of his retained testicles in the thigh instead of in the scrotum. Apparently his surgical modesty was such as to forbid him from looking to see where he was putting the gland. The dissection of the scrotum must be carried rather toward the perineum so as to get to the bottom of the sac and deeply enough so as to open the fascia right to the skin.

The scrotum is now inverted on a finger so that it is turned inside out and brought up into the inguinal incision. With a straight needle and a fine suture of chromic gut the testicle itself is then sutured to the bottom of the scrotum. Two precautions are here necessary. In the first place the suture must be placed in the testicle itself, for if the surrounding fascia is sutured there is so much laxity that the testicle may not be drawn down into the scrotum. It is obviously improper to suture the epididymis to the scrotum for fear of obstructing the excretory duct, whereas a suture in the testicle itself does no harm. The second precaution is to avoid very carefully any torsion of the testicle.

With the finger withdrawn, the testicle enters the scrotum and is pulled down into place. There it should lie without any tension whatsoever at least well below the pubic bone, preferably so low as to be opposite its fellow. If the testicle does not lie spontaneously in good position it is our belief that no amount of suturing about the neck of the sack or suturing the testicle itself to the thigh will better the situation.

The wound is now closed in the usual manner, beginning with closure of the hernial sac and then passing to closure of the inguinal canal. It has not been our custom to transplant the cord as in the usual Bassini operation.

It is noteworthy that three patients have come for a second operation, one a personal failure, the other

two failures at other hands. Each of the three was reduced with no real difficulty although the separation of adhesions considerably prolonged the operation. The ultimate result was just as good as that obtained in primary cases.

RESULTS

We have operated on forty-two testicles, twenty-two right, nineteen left, nine bilateral. The average age of the patient was 19, the youngest was 5, the oldest 33. Five of the patients were between the ages of 5 and 9 years; all had excellent results excepting one operated on in 1907. He was 9 years of age at the time of operation, and both of his testicles were in the inguinal canal. They were placed in the scrotum and sutured to the thigh, but they broke away and retracted into the inguinal canal again. Eight years later the right one could not be felt, the left one lay near the external ring and was, by our present method of operating, readily placed in the scrotum, giving a good result. One other patient, aged 16, had an extremely bad result. The right testicle sloughed, the left retracted over the pubes. In one other case the testicle is not in good position, being only just below the pubes and in danger of injury. All of the other testicles operated on are in excellent position, that is, they hang free in the scrotum, although many of them are rather in the upper part of this sac. On the other hand, a few of the testicles operated on are lower in the scrotum than their unoperated fellows.

We have three times operated on testicles that have been badly operated on before. All three operations were complete successes.

Before operation three of the testicles lay in the abdomen, thirteen in the inguinal canal, twenty-three at or about the external ring. Hernia was noted in all but eight cases.

During the operation the pampiniform plexus of veins was cut to reduce all of the abdominal testicles, one half of the inguinal ones, and 30 per cent. of those at the external inguinal ring. Most of these operations, however, were performed before we had perfected our present technic. With the present technic we have only once had to cut the vessels of any testicle that lay outside the abdominal cavity. Including even our earliest cases, however, we claim 88 per cent. good results, and no mortality.

We have little to say about ultimate results. A number of our cases have been followed several years, and we are fully satisfied that a patient whose testicle is in good position a month after operation is safe from any retraction of that organ into the inguinal canal. We have no observations of any value on the spermatogenetic function in bilateral cases after operation. None of the testicles operated on by us showed, either at the time of operation or subsequently, any evidence of neoplasm.

ABSTRACT OF DISCUSSION

DR. JOHN A. HAWKINS, Pittsburgh: There is no question that moving pictures such as Dr. Keyes has shown illustrating nephrolithotomy and suprapubic cryptorchidism are of inestimable value and will be of more value as they are worked out. In Pittsburgh, Dr. C. L. Bradford about nine months ago started to take some of these pictures, and kept it up for three or four months. I have an idea that he became bankrupt and had to quit. The expense is very great. It is also rather hard on the operator. The lamps used create an intense heat, which is all right for cold weather, but in hot weather it is awful.

DIVERTICULUM OF THE URETHRA *

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CLEVELAND

Diverticula of the urethra, whether congenital or acquired, are of very rare occurrence, Ehrlich[1] having reported but seventy cases all told up to and including the year 1908. Haberern[2] three years later conceded that but twenty cases found in literature up to that time were authentic cases of congenital diverticula, the rest being of the acquired type.

Of the two cases mentioned in this paper, Case 1 probably represents the acquired type, while Case 2 probably represents the congenital type as described by Grünfeld[3] and De Keersmaecker, who have seen six or seven similar cases and believe they are of the congenital variety. These authors have described cases of small diverticula in the bulbous or prostatic urethra which they accidentally discovered during a urethroscopic examination for the purpose of discovering the cause of a persistent urethral discharge. There was, as in our case, no stricture or other obstruction present, nor was there any history of trauma, and the writers think that they are due to a defect in the urethral groove.

CASE 1.—H. W., aged 30, referred by Dr. W. O. Osborne, had a mucopurulent discharge of several years' standing, and wanted to know whether the discharge was infectious. Externally the genitalia presented no abnormality, no tumors, scars, etc., being evident. At about the junction of the membranous and prostatic portion a No. 28 F. sound met some resistance, but was finally passed into the bladder. Cystoscopy revealed bladder capacity good, mucous membrane apparently normal, except at the trigon, where it seemed to be slightly congested. The sphincter was regular. Anterior urethroscopy, except for a very pale mucosa, was also negative. Posturethroscopy with the Wossidlo showed a cavity on the right side in the membranous urethra, about 1.5 cm. high by 0.5 cm. in breadth. Catheterizing this opening did not produce any pus. The patient was seen only once and has not been heard of since.

I believe that the diverticulum in this case was due to passage of sounds, was a false passage in fact, made while attempting dilation of the stricture.

CASE 2.—H. L., aged 32, referred by Dr. W. G. Mussun, complained of discharge of two years' standing. There were no abnormalities, and no tumor visible or palpable externally. Cystoscopy was negative. Anterior urethroscopy showed a very pale mucous membrane, studded with many inflamed, gaping morgagnian crypts.

Posturethroscopy with the Wossidlo irrigating urethroscope also shows a chronic fibrous condition of the mucous membrane; the colliculus was small and pale. Just anterior and to the left of the colliculus, a small cleft presented itself transversely across the urethra, which on treatment with the Geraghty syringe could be catheterized to the depth of about ⅝ inch. Its walls seemed rather resilient, as they gave way under the pressure of the irrigating fluid. Its capacity was very small, but could not be determined accurately. This case was very similar to the cases described by Grünfeld and De Keersmaecker, and later quoted in this paper.

The patient was treated by instillations of silver nitrate up to 5 per cent. into the diverticulum, and also by anterior and posterior dilations, and cauterization of the morgagnian crypts, but with practically no improvement in his condition.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Ehrlich: Zur Kasuistik und behandlung der Divertikel, Beitr. z. klin. Chir., 1908, **59**, 193.

2. Haberern: Kongenital Divertikel der Urethra, Ztschr. f. Urol., 1911, **41**, 734.

3. Grünfeld: Zur Lehre von der Divertikula der Harnröhre, Halbmonatschr. f. Haut. u. Harnkr., 1915.

Congenital diverticula present themselves usually as more of less spherical saclike dilatations of the urethra usually just behind the glans and always on the lower surface of the penis. They are occasionally found at the penoscrotal angle, and may vary greatly in size from that of a pea, or they may take in the whole area from the scrotum to the glans penis. In a case reported by Hendriksz, the capacity of the diverticulum was greater than that of the bladder. The orifice of communication with the urethra may be very large, or it may be so small that no urine whatever enters it.

No unanimity of opinion exists as to the etiology of congenital diverticulum of the urethra. Voillemier believes diverticular formation due to partial lack of development of the spongy tissue of the urethra, and believes that it is almost identical with hypospadias formation in which there is in addition a defect in the skin. De Paoli, likewise, is of the opinion that there is a primary atrophy and therefore an unresisting corpus spongiosum which allows of the dilatation of the urethra. The most plausible and simple theory is that of Kaufmann, who ascribes the condition to the failure of the distal and proximal end of the urethra to unite at the time when the urine begins to flow out of the bladder. The proximal end of the urethra becomes dilated, and when finally the union is made the dilatation remains as a diverticulum. This theory explains very satisfactorily the frequent occurrence of congenital diverticula in the anterior urethra, and as further proof of his theory he cites the fact that the diverticula are immediately behind the glans penis.

Dittel believes that diverticular formation is really a dilatation of the wall of the urethra, and attempts to prove this by microscopic findings, which show a mucous membrane identical with that part of the urethra from which it springs. He does not consider the absence of the corpus spongiosum as opposed to his theory, as he believes this is easily explained by a pressure atrophy or by inflammation within the diverticulum.

Bokay believes that diverticula are simply dilatations of the normal urethra.

Of the French school, Dr. Durand, quoted by Cabezas,[4] who reports two personal cases, believes that the condition is not one of simple arrested development but is more complex and should be considered as a disturbance of development, for microscopically he found the corpus spongiosum was perfectly formed, though varying in thickness, and covered the entire dilatation of the mucosa; consequently this lining does not form a simple hernia through an opening in the corpus spongiosum.

Cabezas further goes on to say that in congenital diverticulum not only is the mucous membrane of the diverticulum continuous with that of the urethra but histologically the structure is the same as that part of the urethra from which it springs.

Of American authors S. H. Watts[5] is the only one who has written extensively on the subject. He cites in full all cases of congenital diverticula reported up to 1906, and believes that at least a very fair proportion of them can be explained by some form of obstruction to the urine in fetal life, such as valve formation, as described by Englisch, congenital strictures, narrowing of the preputial orifice and adhesions of the prepuce to the external meatus.

Von Grigolow believes that diverticula are due to dilatations of accessory periureteral ducts which are themselves due to partial defects of the genital gutter. When these ducts empty at a very acute angle into the urethra, they form valvelike obstructions which are often responsible for considerable difficulty in emptying the diverticulum in postnatal life.

Suter[6] too explains the formation of diverticula by some congenital defect in the genital gutter. In reviewing the literature up to 1908 he found only four cases which had been carefully examined histologically and presented a similarity in structure. The lining membrane in these cases presented a papillary connective tissue layer and a stratified epithelial layer, which resembled the structure of the skin to a marked degree. There was no spongiosum present surrounding the sac. Suter's personal case presents a like structure; in fact, so marked was the line of demarcation between the tough white wall of the diverticulum from that of the bluish soft unresisting corpus spongiosum that there was no difficulty in separating the two, and removal of the diverticulum presented no difficulty. He therefore concludes that from a histologic standpoint, at least, congenital diverticula are not simple dilatations of the urethral wall but must be looked on as epidermal pockets that communicate with the inferior wall of the urethra. While he concedes that the diverticula are usually in the anterior urethra and often immediately behind the glans penis, he insists that they communicate with the urethra oftentimes at a point a considerable distance behind the glans, and were Kaufmann's theory correct, the orifice of the diverticulum should be a very short distance behind the glans.

Embryologically he explains the defect in this way: The urethra takes its origin from the genital furrow which, covered with epidermal epithelium, forces its way into the position which it is to occupy later as the urethral canal. This canal, at first partially open, has at this time a communicating bridge of epithelium with the external surface. The epithelium of the canal becomes cylindric; that of the communicating epithelial bridge remains squamous. Normally the walls of the canal coalesce and become the urethra, and the epithelial bridge is absorbed. It is the persistence of this communicating epithelial bridge that Suter believes is the cause of diverticular formation or of dermoid.

SYMPTOMS

The first symptom, which is noticed in infancy, usually is the presence of a tumor and a disturbance in micturition. Dittel, however, reports a case of a man of 57, whose symptoms had begun but a year or two before, yet histologic examination of the sac led him to believe the diverticulum of congenital origin. There is an increased frequency, and as part of the urine is diverted into the sac, a stream lessened both in force and caliber; and as the diverticulum becomes further distended it encroaches more and more on the lumen of the urethra, causing an increased obstruction to the urinary stream. The rapidity with which a diverticulum fills depends on the size of the orifice and to some extent also whether the opening is valvelike, with the free edge of the valve pointing toward the bladder. In most cases, however, the diverticulum

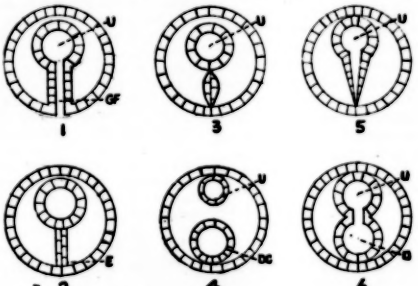
4. Cabezas: Congenital Dilatation and Diverticula, with Case Reports, Am. Jour. Urol. 1913; Von Denk über Harnröhren divertikel, Ztschr. f. Urol., 1912, 6, 621.

5. Watts: Urethral Diverticula in the Male, Johns Hopkins Hosp. Rep., 1906.

6. Suter: Ein Beitrag zur Histologie und Genese der congenitalen Divertikel der m. Harnröhre, Arch. f. klin. Chir., 1908, 87.

empties itself slowly drop by drop, after the urinary act is completed, and does not give rise to a great deal of trouble unless the sac becomes infected. Not infrequently it becomes necessary to empty the sac by manual compression, especially when the opening is very small; or a valve interferes with the emptying of the diverticulum, causing dribbling of urine, and when communicating with the posterior urethra may cause an incontinence. Laugier's patient voided normally, but the diverticulum filled first, and then the urinary stream commenced. Should infection occur in the sac, the obstructive factors may make themselves much more evident and may become very acute and cause considerable apprehension as to life, or the condition may become chronic and may be the cause of the usual sequel of a long continued urinary obstruction, such as cystitis, hydronephrosis, pyelitis, pyelonephritis, etc. Sudden urinary obstruction due to diverticular formation may follow excesses in drinking or in venery.

Stone formation is very common in diverticula. It is remarkable how many and how large the stones may be and not cause any serious discomfort. Grube, quoted by Roith,[7] reports a case of diverticula containing 182 stones. In the same paper the author describes his own case of stone in a diverticulum weighing 125 gm. and measuring 6 by 5.5 by 4.5 cm., which to the patient's knowledge had existed since earliest childhood, and up to two years previous (he was now 36) had caused him no trouble whatever. A soft rubber catheter, 20 F., passed by the stone with ease, and except for a little dribbling, for two years past, there was no interference with the urinary stream. It is sometimes of interest to know whether the stone is the causal agent in diverticular formation or vice versa.



Abnormalities in the development of the genital furrow: *U*, urethra; *G F*, genital furrow; *D C*, dermoid cysts; *D*, diverticulum.

Goldberg[8] reports a case of persistent gonorrhea which was finally cured by lavage of a diverticulum the size of a hen's egg in the perineum. The patient may first become aware of the diverticulum when, during an acute gonorrhea which is apparently cured, pus may be expressed at intervals from the urethra and with no reference to the length of time the urine was withheld, or to the time of day, and disappears just as quickly at it came. Occasionally with irrigation under pressure with a Valentine syringe, some of the irrigating fluid may be forced into the diverticulum and cause a tumefaction.

DIAGNOSIS

This is usually easy, for the patients usually come with a characteristic history, that is, the formation of a tumor on the ventral surface of the penis during micturition which gradually decreases in size after the urinary act is completed. Occasionally the swelling is not noticed until infection, whether gonorrheal or otherwise, sets in. Another method is to empty the bladder of its urine, and as the catheter is withdrawn and its eye is opposite the opening of the diverticulum, there is a sudden gush of urine as the sac empties itself. Endoscopic examination, especially under water dilation, will often reveal the opening of the diverticulum. A congenital diverticulum, too, will give some history of urinary disturbance, such as dribbling, straining or even complete obstruction since early infancy or childhood.

The etiology of acquired diverticula is varied and may be due to one of many diverse causes. Dilatations may form on the proximal side of strictures or at the site of postoperative scars. Stagnation of urine may occur, and the weakened unresisting wall may give way, and form diverticula.

Injuries to the urethra, whether accidental or operative, as also fistulas, retention cysts, hematomas or abscesses which burst into the urethra, may be the cause of the formation of diverticula. In the male, retention cysts of Cowper's ducts or abscess formation of Cowper's glands, or chronic inflammatory conditions of the mucous follicles of the urethra, or the bursting of dermoids into the urethra are the most frequent causes. It is evident, therefore, that acquired diverticula may be situated anywhere in the urethra, contrary to the congenital, which are practically always in the anterior portion of the canal.

Careless instrumentation, followed by more or less urinary infiltration, abscess formation, and finally formation of diverticula, is the sequence of events sometimes experienced by the careless worker in the genito-urinary field.

In the same manner, falling astride the perineum may cause formation of diverticula first by secondary stricture formation and diverticula formation behind it; secondly by breaking down of a hematoma and the rupture of the abscess subsequently formed into the urethra, or thirdly by leaving at a traumatized area a locus minoris resistentiae and consequent dilatation and diverticular formation. When calculi obstruct the urethra, they may be an etiologic factor.

According to Watts, in diverticula formed behind strictures, the lining mucosa is always inflamed, often even destroyed, this being due to the hard, friable, almost nonelastic nature of the wall of the urethra behind the stricture. When the diverticulum is due to an abscess formation or following the rupture of a cyst, the lining membrane is either granulation or scar tissue. The mucous membrane of the diverticulum behind a stone is usually smooth and well preserved. In all other respects the acquired resemble the congenital diverticula, that is, in their tendency to stone formation, obstruction to urine, etc.

TREATMENT

For congenital diverticula this consists if possible in removal of the sac over a catheter in the urethra and the sewing of the edges into the canal so far as pos-

7. Roith: Ein Fall von ungewöhnlich grossem Divertikel der Harnröhre, Beitr. z. klin. Chir., 1908, **74**, 267. Aronstam: Urethral Diverticula and Cul de Sacs, Med. Rec., New York, 1906, **70**, 298.
8. Goldberg: Verhandl. d. deutsch. Gesellsch. f. Urol., 1908, **24**, 622.

sible to restore its normal caliber. Should there be any congenital obstruction such as stricture or valves they must be removed.

In acquired diverticula, the cause, such as stone, must be removed. If the case is a recent one, the removal of the stone will at once cure the condition, while in an older case in which extensive changes have taken place in the wall of the sac, the return to normal will be much slower. Diverticula due to stricture formation are cured by dilatation of the stricture, and owing to the fact that there are marked changes in the wall of the urethra, the restoration of the wall to normal is very slow.

Diverticula due to rupture of dermoid cysts, abscess of Cowper's gland, etc., can as a rule easily be cured by excision of the offending sac.

CONCLUSIONS

Congenital diverticula may be due to any one of several causes, and the theories of epithelial rests advanced by Suter, the theory of defect in or weakened corpus spongiosum as advanced by Kaufmann and others, or the theory of congenital obstruction as advanced by Watts are in the main correct, the various authors encountering a case or cases that they believe prove their contention.

Diverticula may be the cause of persistent urethral discharge, whether specific or otherwise, and sometimes when infected may become a menace to life, may cause serious urinary obstruction, cystitis, pyelitis and pyelonephritis.

While diverticula of the urethra are much rarer than bladder diverticula, and can usually be recognized easily, there are some cases in which there is no tumor evident, and only a casual urethroscopic examination or one for a persistent discharge will discover it.[9]

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ABSTRACT OF DISCUSSION

DR. F. W. ROBBINS, Detroit: Through the kindness of Dr. MacGowan I recently saw an interesting case of diverticulum of the urethra. This patient had been treated for stricture of the anterior urethra. The young man had never had any venereal disease whatever, and had been under the care of an irregular physician for some little time. The interesting part was that his symptoms were those of severe stricture of the urethra to the extent that he was obliged to wear a rubber blanket at night to keep the bed from getting wet. We found the diverticulum about an inch from the meatus. After incising the diverticulum and gradually dilating the urethra up to 28 the symptoms subsided. The man had been a great sufferer mentally, but entirely recovered after a diagnosis had been made and proper treatment instituted.

DR. ARTHUR B. CECIL, Los Angeles: I had thought that diverticula of the urethra were rather infrequent until I heard the discussion of Dr. Englander's paper. On account of the supposed rarity of the condition the following case might be of interest: A man thirty-six years of age was seen by me in consultation with Dr. McNab, of Los Angeles. He complained of having a stricture and was in severe pain due to retention of urine. A silver catheter was passed into the bladder with ease and emptied about 800 c.c. of urine, but as the catheter passed through the bulbous portion of the urethra there seemed to be pressure against it. Examination of the scrotum showed a rounded sac about as large as an egg which fluctuated on pressure. On turning the beak of the silver catheter downward it could be passed into this sac in the scrotum and when pressure was made on the sac it emptied through the catheter about 80 c.c. of cloudy urine. The opening of the diverticulum was just back of the external sphincter muscle.

DR. DAVID W. MACKENZIE, New York: About a year ago I reported a case of double urethra with a review of the literature. There is no doubt that some of these cases are typical diverticula, but many of them are misplaced periurethral glands with dilated ducts, small paraurethras with one or more openings into the urethra, and the complete double urethas ending in blind pockets. The patient I had last year had a stone in this canal, and when the stone was removed, he started passing his urine through it. He came to our service to have the sinus closed up. On opening the sinus we found a double urethra extending from glans to membranous urethra which we removed en masse. I do not think we can catalog the congenital diverticula as belonging to any one class. They come under true diverticula ducts of misplaced lobes of the prostate and periurethral glands and double urethras.

DR. CHARLES M. MCKENNA, Chicago: Some of those cases are overlooked in the diagnosis. I recall a patient, a man about 27 years of age, who came to me for advice regarding marriage within the next year. He gave a history of gonorrhea of about two years' standing. He had a hypospadias with an opening about one fourth of an inch back of the meatus. I noticed on examination of the urine that the first glass was always cloudy and filled with pus while the second glass was clear. He gave the history of being treated for about two years and could not notice any change. I noticed after irrigation that I could expel pus from the urethra by running my finger along the posterior wall. One day I noticed that the urethra was enlarged at one particular place and on pressure I was able to expel about half a dram of pus. It contained gonococci. The patient was sent to the hospital and the diverticulum cut down on and ligated off; the mucous membrane was examined. It was found to correspond with that of the urethra and gonococci were found in the pus of the diverticulum.

DR. SIMON ENGLANDER, Cleveland: I think that the acquired diverticula are a great deal more frequent than the congenital. For this reason I think it depends on one's conception of what a diverticulum is as to which is the more frequent. Just before I came here we had a case in the dispensary. The man had had an operation for a bulbomembranous stricture. You could with the Wossidlo irrigating cystoscope, as well with the Buerger cysto-urethroscope, see a scar in the membranous urethra. The posterior urethra was considerably distorted. Back of the colliculus was an overhanging shelf and under that a diverticulum. Perhaps some would call that a diverticulum and others would not. We did. Since preparing this paper I have seen five or six of these cases, all of which I think were acquired rather than congenital, because there is a history of something having happened, traumatic or otherwise, and then some of these patients presented other symptoms which strengthened our opinion that etiologically the diverticula were acquired. As to the question of cure of diverticulum, unfortunately I have not had an opportunity to do any operative treatment. My treatment up to the present time has consisted of silver nitrate instillation. I admit I have not had much success.

9. In addition to the references already given, the following will be found of interest:
Bagat: Urethral Diverticula, Med. News, 1895, **67**, 240.
Eitner: Zur Kasuistik der Harnröhren Divertikel, Wien. Med. Wchnschr., 1909, **59**.
Lessing: Ein perineales Harnröhrendivert, Monatschr. f. Urol., 1904, **9**.
Von Zeissl: Ueber den Blasen verschluss und über die Trichterbildung der Hinteren Harnröhre, Wien. med. Presse, 1896, **37**, 697.

The Aim of Medical Science.—Of all the sciences, medicine has always worked and studied that the lot of man might be easier—that the diseases which threatened the human race might be checked, that inhospitable climes might be made fit for human abode. But of all the sciences, medicine alone has never had as its goal the discovery of agents for the destruction of man. We have never prostituted our mighty enginery to the destruction even of an enemy. This is, indeed, a glorious heritage and one we must not lose sight of. —James M. Putnam, M.D., Address before Buffalo Academy of Medicine.

CONCEPTIONS AND MISCONCEPTIONS IN PSYCHANALYSIS *

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Not infrequently a discussion purporting to relate to a given subject expresses nothing more than the unsophisticated views of the speaker concerning some notion or other which he mistakenly conceives the subject to be. Perhaps no theme has suffered more from the disfigurements of these naive tendencies than psychanalysis, so that one does well to distinguish between psychanalysis and rumors of psychanalysis.

The truth is, psychanalysis labors under the grave difficulties surrounding any subject which offers us an entirely novel point of interpretation; and far more formidable than the barriers of novelty and strangeness is the fact that psychanalysis is a method which is essentially revolting to our conventional social consciousness, entailing harsh incriminations from which we would prefer to turn away. It is a therapeutic procedure which our moral conventions hold in natural repugnance; it is an unpleasant discipline that thrusts before us those things which we dislike to look on. But if the theory on which the method rests is correct, such an inbred antagonism to the precepts of psychanalysis is of the very essence of its thesis, for psychanalysis, rightly understood, is a method of treatment based on the recognition of a psychic conflict in the life of the patient arising precisely from his inherent revulsion against the artificial inhibitions which are imposed on him under the constitution of society. The conflict is therefore a social one.

It would seem, then, that we all have within us the elements of the neurotic diathesis; that the difference between the normal and the neurotic is more a matter of circumstances than of constitution; that the interval between the two is proportional rather than generic.

If, therefore, psychanalysis, unlike the gently conciliatory procedures characteristic of other forms of psychotherapy, is a method whose specific task it is to lay bare the pious devices through which we seek to evade life's sterner verities, we shall very naturally incline to resent it as an impertinent intrusion. Indeed, it requires no small measure of courage to view with equanimity the unwelcome factors which psychanalysis thrusts before our eyes.

It is, then, because of the essential significance of psychanalysis, with its open hostility to the wide social repression of those insatiate biologic demands which belong, broadly speaking, to the sexual sphere, and the consequent affront it offers to our habitual sense of outward reserve, that I am led to utter a warning lest in estimating the value of this inimical method we allow traditional prejudice to distort our judgment.

The psychanalytic method, introduced by Sigmund Freud, is, of course, concerned solely with the treatment of nervous disorders. In reality the term "nervousness" or "neurosis," as commonly applied, is etymologically misleading, for the morbid condition involved in such psychic disturbances is not neural; it is moral. There is question not of a disease of the tissues but of a disharmony of the personality; not of a lesion of organs but of a schism of consciousness. We are dealing not with the pathology of the neural elements but with the psychology of the social element as presented in the individual unit, for the disturbances with which psychanalysis has to cope entail in every instance a psychic disharmony based on the individual's relation to the social environment. It is an interesting fact that in every psychanalysis there is discovered the influence of some hidden presence who stands in each instance in the closest personal relation to the patient and constitutes the important factor in the production of the neurosis.

Before considering, however, the theory, the instruments and the aims of psychanalysis, it may be well to mention certain misconceptions in regard to the method. Perhaps we shall gain ground if, before attempting to say something of what psychanalysis *is*, I say a word as to what psychanalysis is *not*.

Already I have made intimation of the element of sexuality as an etiologic factor in the manifestations we call neurotic. Many will doubtless have heard of the inevitable implication in the psychanalytic method of treatment of the sexual sphere of the patient's life. Some probably will either have explicitly heard, or have tacitly gathered, that psychanalysis presupposes the existence in the life of the patient of some secret perversion of the sexual instinct, and that it is the task of the psychanalyst to extort a confession of some such hidden misdemeanor. Therefore it is but natural if, from the prevailing trend of current hearsay, it will have been inferred that this new method of psychotherapy proceeds on the assumption that nervous disorders—hysteria, obsessional and imperative states, so-called neurasthenia and psychasthenia—are invariably to be explained by the hidden presence of some abnormal mode of sexual indulgence, and, therefore, the origin of a neurosis, according to Freud's interpretation, is linked with the idea of some species of sexual delinquency.

As widespread as this conception has become, nothing could be further from the truth. In point of fact, the proposition it maintains is precisely the contrary of that posited by psychanalysis. In his "Drei Abhandlungen zur Sexualtheorie," Freud[1] clearly defines the neurosis as the negation of abnormal sexuality. He distinctly says that the neurotic and the sexual delinquent stand at exactly opposite poles to one another. It cannot be too strongly emphasized, therefore, that the manner in which the patient's sexuality is related, according to Freud's interpretation, to the etiology of neurotic disorders is one which, far from incriminating him, wholly absolves him from the stigma of abnormal sexuality.

Still another very prevalent misapprehension is the view that psychanalysis is synonymous with the obtaining of a general confession from the patient.

Far be it from me to deny the time-honored psychotherapeutic axiom that an honest confession is good for the soul. No one, I think, realizes better than the psychopathologist the undoubtedly remedial effect which follows on the unbosoming of some secret conflict in the mental life. But the whole point in the psychanalytic interpretation of the neuroses is that these disorders arise precisely from conditions which render voluntary confession impossible, it being the nature of the disturbing element that it remains of necessity wholly unknown to the patient himself.

The typical clinical picture confronting the psychanalyst is that of an individual who, on examination, either reveals no evidence of disease whatever, or else presents a condition which cannot be accounted for by

* Read before the Huxley Society of the Johns Hopkins University.

1. Freud, Sigmund: Drei Abhandlungen zur Sexualtheorie, Vienna, Deuticke, 1910.

any demonstrable physical lesion. Indeed, it is not infrequent that in the opinion of the ablest clinical experts he is pronounced absolutely free from organic disorder. Often the patient himself declares that he feels in excellent physical condition, that he eats wholesomely, sleeps soundly, and realizes that he has everything that ought to make a man well and happy, and yet whose every moment is one of unmitigated wretchedness. He is perhaps a prey to phobias, obsessions, apprehensions, depressions, sudden and unremitting imperatives, the appalling loss of the sense of reality, to mention the most characteristic symptoms of neurotic states, or he may suffer from digestional disturbance, respiratory inhibition (stammering), muscular contractions, etc., and yet is utterly perplexed to account for the plight in which he finds himself, and completely powerless to furnish any data that might throw light on these abnormal manifestations.

In other words, we are in the presence of factors which operate *unconsciously*. That is, we have to do with organic effects and reactions which fail to attain the level of conscious perception and which are therefore from the conscious standpoint equally impalpable to patient and physician. Let us bear in mind, then, that *the sphere of psychanalysis lies exclusively in the field of unconscious mentation.*

With these distinctions before us, I shall try to explain briefly the basic principles of psychanalysis, and to show something of what the method seeks to attain.

In many fundamental respects, Freud's teaching, as has been said, marks a wide departure from the hitherto prevailing view as to the interpretation of neurotic states.[2]

In the first place, Freud ascribes all neurotic disorders to the existence in the patient of wishes which are unrecognized, that is, not directly envisaged by him. Wishes of this unpremeditated character he subsumes under the term "unconscious," and gives to the realm of psychic activity constituting, as it were, the abode of such unconscious trends, the name of "the unconscious" (*das Unbewusstsein*).

Secondly, he regards the neurosis as a spontaneous expression of the tendency toward the fulfilment of such unconscious wishes. Thus he ascribes to the neuroses a purposive significance — a moral import. The neurosis contains a motive. It embodies an underlying intention: tends to supply a void not clearly cognized and defined, because existing outside the precincts of consciousness.

Thirdly, the ideas or wishes which thus occupy the sphere of unconsciousness possess the generic character of being invariably such as are ethically inadmissible in the sight of consciousness, so that the psychologic account of the creation of this limbo of the unconscious is to be found in the psychic conflict arising out of the opposition of consciousness to these ethically unwelcome desires and their consequent enforced banishment from consciousness — a process which Freud calls the mechanism of repression (*Verdrängung*).[3] Hence, in accordance with the hypothesis, a psychic conflict, with the attendant repression of the unseemly element, is the basic factor in the production of the neuroses.

Fourthly, it is Freud's thesis that all such conflicts as issue in such unconscious repression have their ultimate basis in the sphere of the sexual instinct. In other words, psychanalysis posits a sexual *repression* as the essential condition in the etiology of a neurosis.[4]

And lastly, the theory assumes that such symptoms as are the expression of a tendency toward the fulfilment of these forbidden trends are but an indirect, cunningly veiled representation of them; that they are substitutions employed by reason of their associative affiliation with the original underlying idea. Each symptom is the dramatic portrayal of the repressed wish subjected to a process of modification through the effort of consciousness to evade its real significance. The symptoms thus expressive of a neurosis are in each instance the resultant of contrary and opposed psychic trends, and represent in their outcome a compromise between the two.

Such remodeled, distorted expressions of the brute, primitive instincts as appear in the symptoms of neurotic disorders, Freud has called the phenomena of unconscious symbolization. This unconscious symbolization of instinctive trends whereby is effected the necessary palliation required by the censor of consciousness is the crux of Freud's interpretation of the neuroses.

According to Freud, the instinct of reproduction is paramount in the life of the individual. Yet the sexual trend is not the simple, unitary, static phenomenon it is generally assumed to be, but, like other factors of evolution, is a dynamic process having its integrative components derived from simpler elements. Freud points out that the sensations contributory to this impulse are originally composed of dispersed and inarticulate components, having their seats in various erogenic zones located over the body surface and situated chiefly in the regions composing the body orifices. The sensations arising from such erogenic zones are present, he tells us, in earliest infancy, and it is of these scattered, incoherent elements that the characteristic sexual feelings pertaining specifically to the organs of reproduction are later constituted. The ultimate attainment of the instinct directly conducive to reproduction consists, then, of a process of integration representing the product of individual evolution. Accordingly, there are three possible courses in the development of the ultimate sexual life of the individual:

First, the sexual life may take a normal course leading to the gradual absorption, so to speak, of these scattered auto-erotic trends into the resultant allo-erotic instinct comprised in the ultimate reproductive quest, and having its physiologic center in the organs of generation. In such case we have the integration which results in the individual of a normal sexual life.

Secondly, there may be a persistence of the original auto-erotic interests and of the sexual satisfaction attaching to these primary erogenic zones, with failure of the aforesaid integration into the sexual impulse which tends toward the goal of reproduction. In this case there are presented the variations of the normal sexual impulse which constitute the *perversions.*

Finally, the sexual interest or *libido* pertaining to the different erogenic zones through repression may be

2. Forchheimer, Frederick: Therapeusis of Internal Diseases, New York, D. Appleton & Co., 1913, 4, 569.

3. Brewer and Freud: Studien über Hysterie, Vienna, Deuticke, 1910.

4. It should be explained, however, that the word "sexual," as Freud uses it, has a far more general and inclusive meaning than is conveyed by the term as commonly employed. Contrary to the specific connotation of conventional usage, the term denotes, with Freud, the entire sphere of the primary, biologic pleasure-affects.

deflected into vicarious avenues of sexuality corresponding symbolically to such frustrated interests. Such an outcome epitomizes the mechanism of the neuroses as envisaged by Freud. Of course no rigid line of demarcation separates these three possible developmental issues, but there is among them more or less of interlacement of the characters distinctive of each.

The neuroses, then, represent in a negative way a miscarriage of the sexual instinct analogous to that represented in a positive way in the sexual perversions. Freud's thesis, therefore, is that the neuroses betray an inadequacy in the development of the psychosexual life. This inadequacy marks a regression toward a sexual mode appropriate to an earlier, infantile period and postulates a latent, unconscious fixation of the *libido* on its original, infantile object. Hence the sexuality of the neurotic is hindered, repressed and, as it were, preoccupied elsewhere than with the immediate and contemporary object of sexual interest, and the psychologic situation presented by the patient is summed up by Freud in what he terms the patient's "sexual resistances" (*die sexuelle Widerstände*).

Such is the fundamental idea of psychanalysis in regard to the origin and development of the neuroses. The primary factor in the production of the disorders is the repression of the individual's sexuality due to the ban set on the manifestations of this elemental instinct by the strictures of social and religious conventions. It is the conflict between the forces of artificial culture and those of an inherent instinct of sex, the former imposing the repudiation of sexuality, the latter insisting as resolutely on a due recognition of the basal significance of this elemental factor in the biologic economy. The sexual instinct stoutly insists that it be granted recognition in consciousness, and consciousness, in its narrow intolerance, is as fiercely resolved to debar so unseemly an intruder. The final upshot of the situation is a compromise. It is agreed that the unruly element be admitted to consciousness on condition that it soften its tone and, as it were, adopt conventional apparel conformable to the requirements of adult, social consciousness. It is to this end that the psychic organism assumes the social defense it finds in the elaborate metaphorical usages presented in the patient's "symptoms." For it is only through dissembling that the repressed complex can succeed in evading the anathema of the conscious censor. But, though disguised in consciousness, this discordant, outlawed element still lurks in the unconscious, where, acting surreptitiously, it incites dissension amid the constituents of the personality, impairing its unity and destroying the mental synthesis requisite to the purposes of concerted function.

It is Freud's thesis, then, that the neurosis entails a psychic conflict due to an attempt to exclude from a fit acknowledgment, in consciousness, the biologic factors whose prerogatives are fundamental and inalienable. As has been said, such an exclusion of normal interests from participation in current consciousness Freud calls a *repression*. A psychic repression being the essential mechanism of a neurosis, the question for psychotherapeutics is, How may disorders arising from a psychic conflict, issuing out of the arbitrary and extraneous repression from consciousness of such contraband associations, be remedied? Freud, seeking to give the direct logical answer, contends that disorders embodying psychic conflicts due to repression of elements which have a right to tenancy in consciousness are to be effectually cured only by removing the repression and freely admitting such contingents to their hereditary rights in consciousness.

So much by way of outline of the principles contained in Freud's system of psychotherapy. Now as to the method.

METHOD OF PSYCHANALYSIS

It will be clear from the foregoing that the task of the psychanalyst is to bring into the high light of consciousness the ideas or associations which have been relegated to the recesses of the unconscious. The sole clue, however, to such repressed fancies lies in the symbolic equivalents into which these unconscious ideas have been converted through the process of repression. And the source of such surrogate symbolizations is to be sought in the symptoms themselves, in every spontaneous, unguarded reaction of the patient, and, most critically of all, in the patient's dreams. For it is in the drama of dream imagery, which the mind enacts during sleep, when the sentinels standing guard at the outposts of consciousness grow lax in their vigil, that these harpies of the unconscious most easily escape durance and venture to disport themselves with least danger of surprise.

Here, then, is our opportunity to take the demon of the unconscious unawares. Not that this unconscious ogre, be it remembered, is wont, even in dreams, openly to expose itself, but there are revealed in the creations of dream phantasy traces of its presence whereby it may be tracked to its hiding. This tracing of the repressed interests contained in the ideas lying behind the dream images constitutes the method of dream analysis, as developed by Freud, and it is the analysis of the patient's dreams which is by far the most important resource of the psychanalyst.

In Freud's conception, the actual dream, as revealed to consciousness, that is, the *manifest content* of the dream, is but an enigmatic congeries of psychic images — a charade that condenses in scenic productions a whole mass of related, interconnected meanings or dream thoughts, and it is the latter which constitute the real or *latent content* of the dream. Dream analysis or dream interpretation consists precisely in reaching these concealed fancies and so correlating them in accordance with precepts empirically determined as to render them coherent and significant. To do this it is required that the patient retrace the mental threads out of which he has woven together the elements of his dream tapestry. Such threads are composed of links in interconnected chains of associations, and it is the task of psychanalysis to follow these threads of associations to their source, in order to reach the material out of which the dream images were originally spun.

Such a proceeding is fraught with difficulties, for obviously as the dream creation is precisely the outcome of the effort of consciousness to disguise, and so evade, the real meaning underlying the manifest dream elements, analysis involves a task no less formidable than that of pitting the patient against his own inherent will. It really means setting the patient at cross purposes with himself by forcing him to face frankly the thoughts and wishes which he has perhaps for a lifetime sought to repudiate; that is to say, the ideas which have been ruthlessly debarred entrance into consciousness and which in consequence pursue their career beyond the pale of apperception, manifesting themselves subtly in the symptoms and obsessions

characteristic of neurotic states. These ideas are one by one readmitted into consciousness and are through this procedure deprived *de facto* of the essential motive of their existence.

As the analysis constitutes per se the entire system of psychotherapy introduced by Freud, an adequate account of the psychanalytic method would entail a full description of its technic. The technic of psychanalysis, however, is too varied to be susceptible of definite formulation. Indeed, the technic of psychanalysis is too intimately bound up with the delicate psychologic *rapport* existing between physician and patient to be separable from it, for each detail of the patient's behavior conveys its own nuance of meaning that is of the utmost import to the psychanalyst.

The practical procedure which is followed in the analysis of dreams, however, may be broadly indicated. The patient, having repeated his dreams, is asked to relate quite freely whatever occurs to his mind in connection with the different elements of which the dream is composed. This method Freud calls that of "free-association." From the ultimate ideas at which the patient arrives at the end of each of the chains of associations leading from the several elements of the *manifest dream content*, the physician is enabled to reconstruct the underlying trend contained in the latent content of the dream and so discover the patient's dream thoughts.

The links in the chains of associations do not succeed each other at regular temporal intervals, but frequently the patient halts, showing signs of discomfort and unwillingness to continue. It is apparent that in such instances the patient's flow of thought is blocked by resistances, that is, he has come on a trend which he has long put away from him as distasteful, as unfit to hold a share in his contemporary consciousness. At such crises, the patient must be encouraged to continue without fear or reserve. He is reminded that the self-criticism which interposes itself in the current of his spontaneous associations tends to thwart the course of the analysis and to frustrate the whole purpose of the procedure. So when he resumes again the thread of associations, concentrating his attention anew on the reminiscences occurring at the point of interruption, it is usual that he will be brought to reveal some incident or trend of marked significance in his affective life. In other words, one comes in such intervals on psychic material which has been submitted to the process of repression and which, with its clusters of associations, constitutes a deterring "complex" in the patient's psychic life.

In fairness it must be said that the psychanalytic method of procedure is far simpler to set down in writing than to carry out in actual practice. From the very nature of the neurosis, with its repression or rendering unconscious of the most vital trends in the psychic life of the individual, there are, of course, enormous habitual resistances to be overcome. To lead the patient to break through this habitual reserve is a task requiring the utmost expenditure of time, patience and ingenuity on the part of the physician, so that not infrequently hours are consumed in arriving at the determination of an objective statement which it would require but a few minutes to set down in writing.

Of course the central interest in dream analysis lies in Freud's dynamic theory of dreams. Freud teaches that the basic factor in every dream is an unconscious wish fulfilment: that whatever the manifest content may be, however foreign apparently to the idea of a coveted purpose, every dream will, on adequate analysis, reveal the presence of a repressed wish. How totally dissimilar in their content are the repressed wishes of the unconscious from what we commonly accept as the interests of our conative life, how utterly abhorrent to our ethical sensibilities such latent "wishes" invariably are, what, in short, is the real nature of an unconscious wish, in the sense of Freud, may be gathered only from a thorough study of Freud's dynamic psychology of the unconscious as contained in his major work "Die Traumdeutung."[5] It is here alone that one is enabled to comprehend the very original and revolutionary conceptions on which Freud bases his theory of the unconscious and in which he elaborates the principles underlying his searching study of the biology of mind.

Next in importance to dream analysis is the association experiment which Jung of Zurich has adapted to practical psychanalytic application.[6] The association experiment is useful chiefly as an instrument of diagnosis and for the purpose of a long-continued study of some specific problem, as the differences of reaction types. But it is also most valuable to the student in beginning psychanalysis as a means of obtaining a preliminary survey of the general reaction of the patient and of opening the way toward gaining insight into his unconscious mental processes.

The association experiment has three chief advantages: First, it affords a *direct* avenue to the patient's repressed interests; second, it offers access to such repressed spheres of affectivity in spite of the patient's own unyielding resistances, and, third, it affords us a means of investigation which includes in it the conditions of an objective control so essential to an exact experimental study of the data required in comparative psychologic tests.

In arrangement and actuation the association experiment is very simple. The idea of the test is this: Every word represents for each person a psychologic situation. This may have, according to individual circumstances, an accent of greater or less emotional value. To say that a word possesses an emotional value is the equivalent of saying that it makes a deep impression on the psychic organism, that is, that it stirs a strong wave of response in the consciousness into which it falls.

Manifestly, if the length of such emotional wave may be estimated, we have obtained a measure of the relative strength of the emotional tone represented by it. This is precisely the result which is effected by the conditions of the association experiment.

A series of words called test words, usually 100, are repeated to the patient, who is required to respond at once with the first word associating itself in his mind with the test word given. By measuring with a stop watch, recording fifths of a second, the interval occurring between the stimulus (the calling of test word) and the reaction (the patient's response), a mathematical estimate is given of the relative emotional value of the situation recalled by the test word in question; for the more profoundly the consciousness of the patient is stirred, the longer will be the interval required in order to return to the mechanical routine of response required by the concrete conditions of the experiment.

5. Freud: Die Traumdeutung, Vienna, Deuticke, 1910, translation by A. A. Brill.
6. Jung, C. J.: Diagnostische Associationsstudien.

Hence, having obtained the length of the patient's probable average of reaction time, any marked excess of this interval indicates the presence of a significant reminiscence, that is, of an underlying complex. A marked variation in the length of reaction time is, then, the most important of the complex indicators.

A further aid in unearthing the hidden complexes is that of obtaining the patient's "reproductions," that is, having obtained his responses to the series of stimulus words, to test his memory of each of his responses by again repeating the test words. In this procedure a wrong reproduction or failure to recall at all the original reaction word is indicative of a complex having been stirred. Here again the excess of the affect carries the mind of the patient from the immediate verbal image to some intimately associated impression, and the significance of the reaction word as such is lost in the greater emphasis of the remembrance awakened by it.

Still a further complex indicator consists in the successive decrease of the heightened interval of reaction time effecting the three or four immediately subsequent reactions. To this species of complex indicator Jung has given the name "perseveration."

The frequent recurrence of the same reaction word throughout the experiment, the assimilation of the test word in an unusual sense, repeating the stimulus word before reacting, replying with more than a single word, offering explanations, etc., are among the many additional indications that a complex has been excited.

Such are the chief means affording a clue to the lines along which the analysis may most judiciously direct its inquiry and so contribute to effect the release and thorough ventilation of the repressed affects which are responsible for the inner psychic disharmony.

It is thus that the physician succeeds in establishing a synthesis amid the discordant, mutually exclusive elements of the personality. It is thus that the psychic tension due to the mental conflict is eliminated and the dissociated elements of the ego are brought together in a simple unitary stream of consciousness.

Such is the treatment of psychic disorders by the method of psychanalysis. The statement given here affords but the merest hint of the full import of the method. This is long and laborious, often entailing in actual practice many months for the adequate analysis of a single case. To gain anything like a commensurate idea of the full significance of the psychanalytic method, one must put himself in touch with Freud's conceptions of the unconscious as presented in his writings. In his various contributions to the literature of psychopathology, Freud has presented an account of the system of psychology on which he bases his explanation of the essential processes underlying neurotic disorders and in which he defines the rationale of the psychanalytic method of treatment.

USES OF PSYCHANALYSIS

While, in my opinion, the discoveries made by Freud through his long and laborious investigations are as sound scientifically and as important economically as any in the history of modern medicine, I do not by any means regard psychanalysis as a universal panacea for nervous disorders, but on the contrary consider it as the particular method of psychotherapy that is most restricted in its possibilities of application,[7] a reflection, however, which is rather comforting than otherwise when we consider the length of time required — frequently, as I have said, as much as an hour daily for weeks and even months — for the adequate analysis of a single case. This being true, it seems a fortunate circumstance that psychanalysis is not the suitable method in all cases — that other and simpler methods of psychotherapy are applicable in many types and degrees of nervous manifestations, and even if sometimes unscientific, they are at least effective for the ignorant masses to whom they are applicable.

The fact is that psychanalysis is practically adapted to only a few persons, but those few belong, generally speaking, to the most educated classes and are precisely those personalities who, from the nature of the conditions of the onset of a neurosis, are the most sensitive, highly developed and worth while among us, and whose reeducation through self-analysis will be most far-reaching in its influence on the body social.

Psychanalysis can never hope to become popular for the reason that it is honest. It does not flatter or cajole the patient or seek to appease him with subtle blandishments; on the contrary, it mercilessly thwarts and assails him. The mawkish and artificial will find in it little unction for their boredom. Psychanalysis offers nothing brilliant or spectacular, but, being a robust, uncompromising method of scientific investigation, it proceeds in the laborious, unobtrusive manner of all earnest research, and is adapted to the needs of only earnest and intelligent men and women.

Though lacking in frills, the method is not without its practical compensations. One need not be irresistible to be a psychanalyst. In psychanalysis "personality" is no asset. The method places no premium on the personal charms of the physician.

The misconception concerning psychanalysis which seems to me of all the most unfortunate is the view that there exists an inherent opposition between the principles of psychanalysis and those of experimental psychology. On the contrary, the psychanalyst of far perspectives can hardly fail to recognize the possibilities of mutual gain in the complementary positions which these two departments of research occupy in relation to one another, nor can he fail to see the opportunity he has in the objective controls of the experimental method for the substantiation of his results. Nothing, it seems to me, can more certainly cripple the researches of the psychanalyst than this very fundamental misapprehension.

I believe William James once said that when any discovery is newly given to science the cry at first is that it is not true, but that later, as the truth of the new theory becomes manifest, this attitude is replaced by the admission, "Yes, it is true, but *I* discovered it." Now that psychanalysis is entering this latter phase of its career, there begin to appear various bogus psychanalytic procedures which are in truth mere travesties on the original method of Freud, and we need be on our guard against the cunning decoys of such spurious artifices.

We shall do well, therefore, to discriminate between psychanalysis as represented in the systematic, laborious, time consuming method of psychotherapeutic research introduced by Sigmund Freud — a method imbued throughout with the spirit and ideals of the laboratory — and the pseudopsychanalytic substitutes which pervert Freud's method to sensational uses. Psychanalysis proper is wholly incompatible with the business of medicine. The hurrying practitioners who say that they use psychanalysis as occasion arises, as

7. Freud has himself been most explicit in the practical limitations he has recognized in the use of the psychanalytic method.

though they kept it on a shelf in bottles, simply fail to understand the first principles of the method; for psychanalysis is not a tablet but a system. It is not to be summoned by caprice or expedience but must be acquired by careful study and training, and above all by the exacting discipline of a thoroughgoing self-analysis.

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GROUP STUDY

A REPORT OF ONE HUNDRED AND FIFTY CASES *

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In a recent article on group study,[1] Birtch has described the methods in use in the Diagnostic Section of St. Luke's Hospital Clinical Club, of San Francisco. He has shown the advantage of correlated study in the investigation of patients, and has explained the details of the diagnostic team work. Since the publication of that article, numerous inquiries have been received which indicate that this method of clinical study is not clearly understood. In order that the profession may understand the character of this work, a brief review of the important features will be presented here.

The most important phase of the work is the thoroughness of the examination. Each patient is examined by each member of the diagnostic section. The purpose of such an examination cannot be clearly appreciated by every one, inasmuch as questions such as the following have been received within the last month. One prominent clinician asked, "Don't I do as much for my patients when I call various specialists in consultation?" In answer to that query, it may be stated that in ordinary practice only those consultants are called who, in the opinion of the patient's physician, are necessary to clear some point in diagnosis or treatment. It is conceivable that an extraordinarily keen physician may be able to discover every lesion in a patient with or without the aid of other individuals. On the other hand, a patient may have early signs of disorder in a certain part of the body, without presenting symptoms of sufficient importance to draw his physician's attention to that region. It is not likely, therefore, that a specialist of diseases of that region would be called in consultation. From a prognostic point of view, the recognition of such a disorder may be of the greatest importance to the patient.

Therefore, in order to eliminate such errors, the members of the diagnostic section decided that each patient should be examined by all the clinicians of the group. By this method, an early retinitis, or a beginning osteoarthritis of the spine would be recognized by the oculist, or orthopedist, respectively, even though subjectively the eyes and spine were negative. Through this plan of investigation, the responsibility of seeking advice does not rest on one individual, for each patient receives the examination of a specialist in the latter's particular domain.

To perform this series of examinations, the patient is in the hospital for an average of 100 hours, and during this period is under the direct control of the resident physician of the diagnostic section. This enables the section to perform all the necessary tests which are so much a part of medical diagnosis at the present time. A daily consultation of all the clinicians is held, and the case is thoroughly discussed from every angle.

Finally, after definite conclusions have been reached, a written report of the history, of the clinical and laboratory findings, of the final diagnoses, and of suggestion as to future therapy is sent to the patient's physician, who again assumes full charge of the case.

This method of group study has been in existence for almost a year. When the work was begun, the diagnostic section had no idea of the many obstacles which had to be overcome, or of the many pleasant surprises which were in store for the members of the section. It is my endeavor to present a few interesting facts concerning the first 150 cases which have been investigated by this method.

A brief consideration of the histories of these patients is of more than passing interest. In an unpublished article, Read has clearly shown that from a careful history one can make a positive diagnosis of the primary or major condition in 53 per cent. of the cases. The same care in taking a history will make possible a positive diagnosis of the secondary conditions in 41 per cent. of cases. It is therefore obvious that an accurate record of the patient's past and present history is of the utmost value for the proper consideration of data elicited on examination.

In order that there may be no omissions in the record of the past, a printed form for the history was prepared and a definite statement required after each question. No such routine could be employed in recording the present illness. Therefore a detailed record of the present illness has not been obtained through any set questionnaire. Omissions by the historian have been corrected by secondary questioning on the part of the clinicians who examine the patient. Through this method few details have escaped the notice of the examining group.

A decided advantage to be derived from such a method of recording histories is the ease with which one may determine the frequency of any symptom, or group of symptoms, in some special disease. As an example, one may desire to know how frequently night sweats have been present in the past history of patients in whom the diagnosis of tuberculosis has been made. Inasmuch as each record contains a statement concerning this fact, one may readily find the answer to such a question. A tabular review of the prevalence of each symptom is periodically made, in an endeavor to confirm or correct clinical impressions which have been gained from the literature. The results of this investigation will appear at a later date.

Turning now to the diagnosis of the case, it has been taught in the past to make as many of the signs and symptoms agree with one clinical picture as it is possible to do. While this is still the aim of clinicians, there has been a tendency to overlook pathologic conditions of apparently little consequence, which, a few months or years later, may be of greatest importance to the welfare of the patient. How often this is true of patients who have been subjected to surgical procedure is only too well known to physicians.

In this series of cases, the major diagnosis has not always followed the prominent symptoms of which the patient complained, but has frequently been more inti-

* Read before St. Luke's Hospital Clinical Club.
* From the Diagnostic Section of St. Luke's Hospital Clinical Club.
1. Birtch, F. W.: A "Group Study" Plan for a Diagnostic Team Acting as a Laboratory for the Profession, THE JOURNAL A. M. A., May 27, 1916, p. 1672.

mately related to the prognosis. Such an instance may be cited in the case of a patient who came to the hospital for surgical treatment of a gastric ulcer. Before the operation had been definitely decided on, the patient was examined by the diagnostic section. Conclusive evidence of peptic ulcer was found, but also definite signs of active pulmonary infection of probable tuberculous origin were obtained. In view of these facts, operation was not recommended, and the final diagnosis placed pulmonary tuberculosis first, and ulcer of the stomach second. One might go into greater detail in discussing this most interesting phase of the work.

From a tabular study of these 150 cases, it is interesting to note that of the forty-eight surgical cases, only seventeen patients were operated on immediately after the diagnosis was made. Of the remainder, three were recommended for operation without further treatment, and for five it was suggested that medical therapy be instituted before operation was performed. This is in marked contrast to the usual procedure in the average surgical case.

STATEMENT IN REGARD TO FOLLOW-UP LETTERS IN THE FIRST ONE HUNDRED AND FIFTY CASES

	No. of Cases
Diagnoses proved (80); partially proved (2)	82
Not proved	39
No report as to condition of patient	28
Not heard from	1
	150
Methods by Which Diagnoses were Proved:	
Operation	14
Necropsy	5
Laboratory	8
Therapeutic test	11
Clinical course	16
Method not stated	28
	82
Condition of All Cases Reported:	
Improved	82
Not improved	26
Cured	14
Dead	17
No report as to condition of patient	10
Cases not heard from	1
	150
Results of Recommendations Regarding Therapy:	
Carried out	99
Partially carried out	18
Not carried out	17
No report	15
Cases not heard from	1
	150
Impression of Physician Concerning Report Submitted to Him:	
Satisfactory	141
Unsatisfactory	6
No report	2
Cases not heard from	1
	150

Furthermore, it is of interest to note that the patient's own words, as given in the complaint, conveyed a definite idea concerning the ultimate diagnosis in approximately 60 per cent. of the cases as far as the primary diagnoses were concerned.

This is of course noteworthy, showing, as it does, the importance of laying considerable emphasis on the actual complaint of the patient. In this day of ultra-scientific medicine, we are too prone to forget that the patient has come to us for a definite complaint. In view of the experience in these few cases, it would certainly behoove all of us to pay more attention to the real troubles of the patient, rather than wander off into the by-ways of medicine in an endeavor to establish some extraordinary diagnosis.

Naturally, one hesitates to draw any conclusions from such a small number of cases. My associates are convinced that group study is a most interesting and instructive method of practicing medicine, in that it gives the patient what he asks for, it aids the average practitioner, and it creates a desire on the part of the members of the group to enhance their medical knowledge.

The best criterion of the success of this method must necesarily be the reports of the practitioners who have sent their patients to the diagnostic section for information concerning the morbid processes of the patients themselves. In accordance with recognized principles regarding hospital statistics, the diagnostic section has sent out the so-called follow-up letters, in an endeavor to determine just how well or how poorly the section was doing. The accompanying report presents the answers to the letters concerning the cases presented above.

A superficial analysis of the report would give the skeptic plenty of opportunity to criticize the principle of this method of investigation. When, however, it is realized that thus far only cases which have been obscure in the minds of the patients' physicians have been referred for diagnosis, it is surprising that the results have been as good as they are. Two features of the report are worthy of note, without further comment: first, 141 cases were satisfactorily investigated; second, in only ninety-nine cases were the recommendations regarding treatment carried out. Early in this work, and even now, there are many who are decidedly skeptical. Unfortunately, they expect that a correct diagnosis must necessarily result in a favorable prognosis. It must furthermore be remembered that many of the cases reported were decidedly unfavorable, prognostically, from the very beginning, inasmuch as the patients came to the diagnostic section as a last resort.

Considering these facts, it may be stated that while the members of the diagnostic team are far from pleased with the reports received from the physicians who referred cases, yet with due regard to the circumcumstances attending the patients, I feel that the percentage of favorable results certainly proves the value of such a method of clinical investigation.

CONCLUSIONS

1. Ten or twelve physicians, each interested in a certain field of human ills, working together, will discover ailments which one physician of more than average ability will not be able to discern.

2. The discovery of symptomless disorders may be of the greatest importance to the patient in after years.

3. A thorough history will make the ultimate conclusion a matter of considerable less difficulty than if that thoroughness was neglected.

4. The keeping of records is an important feature of medical practice, inasmuch as many hard and fast ideas derived from incomplete observations and transmitted from one book to another may be found to be incorrect.

5. The average patient will certainly benefit by the group method of consultation.

6. The average physician in the majority of cases has thus far placed on this method of investigation his stamp of approval, and it is believed that when the idea of group study of patients is better understood, the majority of physicians will give their hearty approval not only to the principle on which it is founded, but also to the method itself.

233 Post Street.

THE TREATMENT OF GONORRHEAL INFECTIONS

BY THE INTRAVENOUS INJECTION OF KILLED GONOCOCCI, MENINGOCOCCI AND COLON BACILLI *

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After the intravenous administration of a highly polyvalent gonococcal vaccine, Bruck and Sommer,[1] in 1912-1913, observed striking therapeutic results in gonorrheal complications, especially arthritis, epididymitis and acute prostatitis. These results, within certain limits, ran parallel to the severity of the reaction following each injection. A specific temperature increase was noted which was higher in gonorrheal than in nongonorrheal patients; hence this method was suggested as a diagnostic as well as a therapeutic agent. At this time the entire process was attributed to the production of a specific immune substance, caused by the intravenous injection of the gonococcal vaccine.

It has been clearly demonstrated that, in typhoid injections, a nonspecific reaction follows the intravenous injection of colon bacilli, pyocyaneus bacilli, and secondary proteose preparations. These substances give results clinically and therapeutically quite like an injection of killed typhoid bacilli.

In order to determine the degree of specificity, if any were present, following the intravenous injection of gonococcal vaccine, three series of patients suffering from gonorrhea and some complication, such as arthritis, epididymitis or acute prostatitis, were chosen in the order in which they had entered the hospital,[2] no attempt having been made to classify them as to severity or complication. The first series was treated intravenously with a strongly reacting dose of gonococcal vaccine; the second series received a similar dose of meningococci, while the third series received a suitable dose of colon bacillus vaccine.

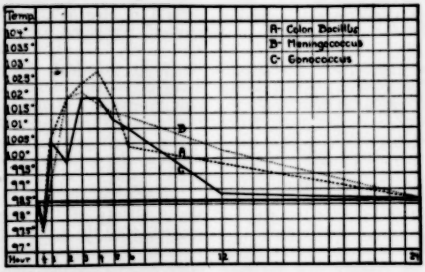

Chart 1.—Composite temperature curves following intravenous injections: fifty-four gonococcal injections in fourteen patients, twenty-three meningococcus injections in twelve patients, and eight colon bacillus injections in seven patients are represented.

The patients, when possible, were kept in bed throughout the treatment, special care being taken to keep them quiet for two days following each injection. No local or internal treatment was given for the gonorrheal infection other than an elevation of the scrotum in all instances of acute epididymitis. The temperatures were taken and the leukocyte and differential counts were made just before each injection and at regular hours thereafter for the first forty-eight hours.

VACCINE TREATMENT

Gonococcus Vaccine.—The first thirteen patients were given intravenously 100 million killed gonococci, and the same or slightly varied dose was repeated every fourth or fifth day until treatment was suspended. The greatest number of injections given one person was six; most of them received five, while one received but one injection.

The injection is followed by a chill of variable severity coming on in from twenty minutes to one hour and lasting from fifteen to thirty minutes. This chill may or may not be accompanied by headache, which is usually of short duration and passes away shortly after the chill is over. Exceptionally there are nausea and vomiting during the first few hours, but it is never severe and is always transient. This occurs always in patients who have disobeyed instructions, by eating heartily within a few hours of the injection.

At the onset and during the chill the patient often complains of severe pain in the affected parts. Whether this is due to some internal cause or to the unavoidable motion produced by the chill it is impossible to say. The pain, however, is variable in different patients and in the same patient at different times.

It is usual for the severity of the reaction to decrease following repeated injections, and this decrease is directly proportional to the number of injections previously given. In order to maintain a constant reaction with each succeeding injections of gonococcal vaccine, there appeared immediately following each intravenous injection a very transient reaction characterized by flushing of the face, cyanosis, dyspnea, and a tingling sensation over the surface of the whole body. These reactions lasted from one to two minutes, after which the patients felt perfectly at ease until the usual reaction appeared in from twenty minutes to one hour. This anaphylactic-like reaction may have been due to a partial sensitization from the previous subcutaneous injections. Three other patients in this series developed a mild type of a very similar condition on their third intravenous injection, but had none following the first two, or after the fourth and fifth injections.

In two of these patients, both of whom had had numerous subcutaneous injections of gonococcal vaccine, there appeared immediately following each intravenous injection a very transient reaction characterized by flushing of the face, cyanosis, dyspnea, and a tingling sensation over the surface of the whole body.

The typical temperature curve following these injections reveals a slight fall during the first part of the chill, followed by a gradual rise, which reaches its maximum in from one to four hours and gradually falls to normal in twenty-four hours. The average maximum temperature for the thirteen patients was 103.9 F., the highest temperature being 104.6 and the lowest a maximum temperature of only 102.8.

The leukocyte counts during a reaction and following it are somewhat variable. Usually there is a mild leukocytosis just before and during the first part of the chill, soon followed by a marked leukopenia, which appears toward the end of the chill. A count as low as 2,000 has been observed repeatedly during this stage of the reaction. This condition is soon fol-

* From the Department of Experimental Medicine, University of Illinois, College of Medicine.

1. Bruck and Sommer: München. med. Wchnschr., 1913, **60**, 1185.

2. All patients here reported were from the services of Drs. Harris, Simpson, McEwen and Stillians of the Cook County Hospital, to whom I wish to express my thanks for the privileges granted.

lowed by a gradually developing leukocytosis which reaches its maximum in from five to seven hours, and remains moderately high for from twenty-four to thirty hours. A return to normal occurs in about forty-eight hours.

The average of the highest counts made in the first thirteen patients was 33,300, the highest individual count being 55,000. The lowest count of one patient was only 22,000. This marked and sudden change in the leukocyte count is due almost entirely to an increase or decrease of the polymorphonuclear leukocytes in the peripheral circulation, their percentage being as low as 50 during the leukopenia stage and as high as 96 during the height of leukocytosis.

Meningococcus Vaccine.—The second series of fifteen patients was treated with killed meningococci in the same dose and at similar intervals as in the gonococcus series.

The reactions as far as could be determined were similar in every detail to those produced by the gonococcus vaccine. One instance of a double reaction occurred following the first injection, and one patient developed this condition after two injections. None of this series had had previous subcutaneous or intravenous injections. The average maximum temperature for this series was 103.5 F., the highest single temperature being 105.2, while the lowest reached only 102. The temperature curves were uniformly like those following injections of gonococci.

The leukocyte curve in general likewise followed those of the first series very closely, the average maximum count being 27,800; the highest single count was 46,400, while the lowest had a high count of 20,000. The type of cell varied as in the first series. One very striking difference was observed between the two series. Over one half of the meningococcus series developed a more or less severe herpes of the lips and mucous membrane of the mouth, first appearing in forty-eight hours and remaining for from four to seven days. This condition did not occur following any but the first injection, and did not become aggravated or recur when further injections were made in a susceptible individual. No such reactions followed the gonococcus injections.

Colon Bacillus Vaccine.—This series contained but seven patients. The reactions were in every way like those produced by meningococcus and gonococcus, with the exception that the size of the dose required to produce the same results was very much less. At first a dose of 100 million organisms was given, but the reactions were so severe that 25 millions were finally used as the initial dose, this to be increased if necessary to produce the desired results.

The average maximum temperature was 104 F., while the average highest leukocyte count was 35,500.

There can be no question that the homologous curves representing the reactions produced following the injections of each organism are very similar, as seen in the accompanying charts; however, the curves representing the colon bacillus seem to reach a higher point in both instances; this is due to the smaller number of injections represented in the curve. The crest of a curve of this kind is obviously not so high as one representing a single typical reaction, since the time of the maximum temperature and leukocytosis may vary somewhat for different individuals, or for the same individual following repeated injections.

As far as therapeutic results are concerned, there is no noticeable difference between the three bacterial suspensions, once the proper dosage is established. To produce results therapeutically, a reaction is necessary. That is, a chill must occur which is invariably followed by the temperature and leukocyte changes noted above. A dose insufficient to produce a definite chill is not followed by so marked a temperature and leukocytic reaction, and clinically no therapeutic benefit is derived. At times there may be some fever production and a moderate leukocytosis not preceded by a chill. The reactions and therapeutic results appear very distinctly similar for the three organisms used when gonorrhea-infected patients are considered. The reactions following injections in nongonorrheal patients are not to be distinguished from those produced in infected patients, nor is there any noticeable difference in the reactions produced here between the three organisms.

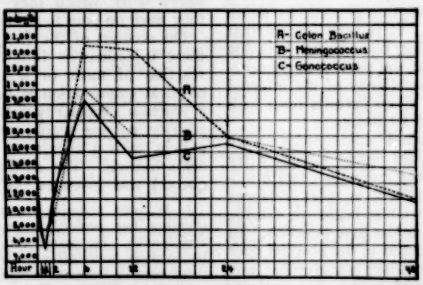

Chart 2.—Composite leukocyte curves following same intravenous injections as represented in Chart 1.

These observations were made by injecting a series of patients having chronic skin lesions but no history or indication of gonococcal infection. The size of the dose required to produce a reaction, the chill, temperature and leukocytosis were alike in every way in the infected and noninfected patients.

Twenty-four patients suffering from arthritis associated with gonorrheal urethritis were treated. Naturally most of these cases were acute or subacute, but some were of five months' duration and many were of over ten weeks' duration when the treatment was begun.

As might be expected, the most striking results were obtained in the acute and subacute cases; the most refractory cases, however, were also in the acute class. Those suffering for long periods appear to respond more slowly to the treatment, but fortunately seem to suffer from no recurrences or new joint involvements during the course of the treatment, as some of the more acute cases do. All but two of the arthritic patients were completely cured or manifested a decided improvement. The length of treatment varied from two days to one month.

Unusual effects were seen in three patients with acute arthritis so severe that sedatives were necessary to give them rest for the first two days in the hospital. After a single reacting dose in each instance they felt so well that they insisted on getting out of bed, and in three days they walked out of the hospital. Two of the patients had effusions in the knee joint, which completely disappeared before their discharge

from the hospital. Unfortunately none of these men have been heard from since, so the permanency of the striking results in these instances is not known. The fact that they have not returned to the hospital suggests at least that a recurrence as severe as the original attack is not probable. Equally striking was the following instance:

J. R., a man, aged 28, had been confined to his bed for four weeks with arthritis of almost every joint of both lower extremities. These lesions had come on during the third week of gonorrhea. After the third injection he was up and walking about, and after the sixth injection he was apparently completely cured. He went back to his work as a cook and has been at work for three months with not the slightest indication of recurrence. At present he says he is gaining in strength daily.

The two refractory cases mentioned were both acute and seemed not to respond at all or very slowly to this form of treatment. One would show considerable improvement for a day or two but invariably would lapse back to the original condition; the second patient recovered completely excepting one knee joint which contained a marked effusion, and seemed not to be affected by repeated injections.

Bruck noticed similar instances, which he explained by the absence of the homologous gonococcus strain from his polyvalent vaccine. It is very evident that this explanation will not suffice, but whether it is due to a special resisting power of the particular gonococcus responsible or to some peculiarity of the infected host, it is impossible to say. Such patients react with fever and leukocytosis, as do all others.

Twelve patients with acute epididymitis were treated, and invariably the pain would subside after the first injection. Usually not more than two injections were necessary, and, indeed, in most instances one, to effect a cure. The swelling begins to subside within twenty-four hours after the first injection. In no instance did the patient remain in the hospital over a week, except in one case in which an overdose was given which will be mentioned later. The patients usually left the hospital on the fifth or sixth day, or just after recovering from the reaction following the second injection.

One patient entered the hospital suffering from acute epididymitis and prostatitis and almost complete retention of urine. About four hours after an injection of meningococci, he passed urine with no apparent obstruction. After three injections he left the hospital apparently cured. No gonococci could be found in the urethra, prostate or vesicles. After he had been at work for five weeks without inconvenience, he went on an alcoholic and sexual dissipation lasting several days, at the end of which period he developed an acute epididymitis on the previous sound side. Even then gonococci could not be found in the urine or urethra.

That these injections are not prophylactic against the development of new complications is evidenced by the fact that one occasionally sees a patient, under treatment, develop an acute epididymitis or an involvement of a new joint. Again a patient may leave apparently completely cured of arthritis to return in a few weeks suffering from epididymitis.

The effect on the urethral discharge is decidedly variable. The discharge in some patients is more profuse for two or three days following the injection, and then rather suddenly subsides entirely; in others a marked decrease in the discharge following each injection occurs, while some of the very chronic discharges seem not to be influenced at all. Regardless of the amount and type of discharge, the gonococci are noticeably decreased in number, and in most instances apparently entirely disappear after from four to six injections.

An attempt was made to follow these patients after their discharge from the hospital. Three months have now elapsed since the first were discharged, and all have been away for at least six weeks. Other than the development of acute epididymitis in three after their discharge there have been no complications or recurrences of any kind. One of the three has been previously mentioned, the second after the cure of a left epididymitis developed epididymitis on the right side one week from the day he left the hospital, while the third developed epididymitis one month after having been discharged as cured of arthritis. All three patients returned to the hospital, without sign of recurrence of the former condition. Over two thirds of all these patients have been heard from directly; some are at work and appear to be gaining in strength daily. Others feel too weak as yet to carry on the heavy work which they have to perform, although they have no pain to prevent them from doing so.

On account of the fact that the reaction following these injections is followed by a chill and general reaction of more or less severity, a very complete physical examination is necessary beforehand. Such a reaction necessarily calls for the increased cardiac activity, so one should proceed with caution when a patient with a coexisting organic heart disease presents himself. The smallest reacting dose of meningococci was given in the following case:

J. W. was suffering from mitral regurgitation of long standing but perfectly compensated, together with acute epididymitis. He passed through the chill with no distress, but in three hours after the injection he became cyanotic, his pulse became irregular and feeble, and he had marked precordial pain. This condition lasted from ten to fifteen minutes, and he had no further inconvenience.

No other cardiac irregularities were noted in the entire series. Arnold and Hölzel[3] cite Lewiniski's case of acute cardiac insufficiency developing after an intravenous injection of gonococci. Heart disease was not known to be present. On the other hand, Luithlen[4] reports a case of gonorrheal endocarditis successfully treated in this manner. There are many instances reported, however, of cardiac symptoms developing in the presence of organic heart disease following these injections, so one should exercise care and judgment in the selection of cases.

From the proper reacting dosage in this series there were noted no other symptoms attributable to the injections. Special attention was given the kidney function, particularly in three patients who had received large doses of colon bacilli. In no instance did albumin appear in the urine, nor did any indication of kidney involvement arise. One patient having a chronic diffuse nephritis with considerable albumin in the urine had two injections with no appreciable change in the kidney function.

Foekler,[5] however, reported epileptiform seizures after similar intravenous injections, and Fischer in

3. Arnold and Hölzel: München. med. Wchnschr., 1914, **61**, 1967.
4. Luithlen: Wien. klin. Wchnschr., 1915, **28**, 533.
5. Foekler: Med. Klin., 1914, **10**, 47.

one instance noted cerebral symptoms, which passed off in twenty-four hours.

Delirium was noted in three patients of this series, all having received a large dose of colon bacilli. This condition was of short duration and completely disappeared in twenty-four hours, leaving the patients in a weakened condition, from which they recovered slowly. All of these patients had a diarrhea of moderate severity for two or three days. One man became so weak that he was kept in bed for ten days, and left the hospital after two weeks. As far as could be determined he had completely recovered, and he appeared physically and mentally normal in every respect.

COMMENT

It is apparent that any therapeutic effect obtained by the intravenous injection of killed bacteria is not due to any specific reaction in the sense that antibody production is stimulated by specific substances contained in the organisms. Jobling and Petersen[6] cite the work of Dunklin, who used proteose injections in typhoid immune rabbits and found a decided increase in the antibody titer, which is explained by a selective stimulation of the hematopoietic system by a nonspecific substance. Walther, Hildebrand, Engelhardt, Rolly and Meltzer have reached the conclusion that high temperatures artificially produced have a favorable influence on any established infection; on the other hand, cold seems to retard the formation of immune bodies.

The optimum temperature for the growth of the gonococcus in vitro is from 97 to 98 F. Any appreciable increase in temperature has a deleterious effect on the life and growth of the organism. A sudden rise to 102 F., or over, means certain death of the culture. Boerner and Santos,[7] using a diathermic apparatus, found that when subjected to a temperature of 102.2 F. for ten hours, the gonococci in the urethra are killed, while an exposure of six hours at 104 F., three hours at 105.8, and one hour, fifty-seven minutes at 107 is necessary to obtain the same results.

This principle has been used in various ways in the treatment of local gonorrhea, with considerable success.

When acute epididymitis develops and is recovered from, does the fever produced thereby have anything to do with the spontaneous cure of gonorrhea? Many patients with infections terminating thus have had considerable fever during the onset of the complication. On the other hand, patients are seen with infections terminating in a similar manner and having had a normal temperature throughout; this, however, does not seem to be a common occurrence.

Experimental urethritis in man by the application of a pure culture of gonococcus to the urethral meatus is known to be very constantly produced; but Finger, Ghon, and Schlagenhaufer[8] regularly failed when the experimental patient had a temperature of from 102.2 to 104 F. due to some existing disease.

A patient recently entered the hospital with acute urethritis of three days' duration. A positive gonococcus culture was obtained on entrance. The second day in the hospital he had a chill, followed by a temperature of 105 F. Malarial parasites were found in the blood, but the chills and fever were allowed to continue for four days, at the end of which time the discharge had stopped, and no gonococci from the urethra or urine were found. He remained in the hospital for two weeks, without recurrence of the discharge, having had no local treatment whatever.

Equally noticeable is the influence of fever on those infections in the medical wards. One rarely if ever sees a gonorrheal infection coexisting with some fever-producing disease like pneumonia, typhoid or malaria, while gonorrheal infections are relatively common among the chronic, nonfever producing conditions.

By the intragluteal injection of boiled milk or sodium nucleinate, Müller and Weiss[9] produced temperatures as high as 104.7 F. in from six to ten hours. Satisfactory results were obtained in epididymitis, prostatitis and arthritis by repeated injections. Smith,[10] using normal horse serum, had results corresponding favorably with those produced by antigonococcic serum in gonorrheal complications. His therapeutic results ran parallel to the reaction produced, which in turn was proportional to the temperature obtained.

On the other hand, Jobling and Petersen[6] assert that intravenous injections cause a fluctuation in the ferment-antiferment balance of the serum as well as changes in the coagulation mechanism and the opsonic complement properties. "No single factor can be identified as responsible for all the changes" resulting from this fluctuation, but "a whole train of events is inaugurated, . . . all of which tend toward a condition favorable for recovery from infection." That there are factors at work other than fever seems probable. Miller and Lusk[11] have found striking therapeutic results in arthritis due to other infections than gonorrheal, as well as in gonorrheal patients, by the intravenous injection of typhoid vaccine. These results, obtained in patients with nongonorrheal infectious arthritis, could not consistently be attributed to fever alone, as the streptococcus and other organisms commonly associated with this condition are known not to be especially heat sensitive. Again, why should a patient completely recover from arthritis by this treatment and occasionally still harbor live, cultivable gonococci in the posterior urethra? The temperature and leukocytes presumably being equally distributed, why should the organisms in a joint disappear and those in the urethra remain? Numbers and arrangement in clumps may be of some importance, while a less resistant organism may be developed by its growth on a new type of tissue. Possibly a continuance of the treatment after recovery from the complication would be sufficient to eradicate the urethral gonococci in all instances.[12]

The therapeutic results in the group which forms the basis of this report noticeably correspond to the temperature increase and to hyperleukocytosis. Considering the facts that the gonococcus is heat sensitive both in vitro and in vivo, that fever patients cannot

6. Jobling, J. W., and Petersen, William: The Nonspecific Factors in the Treatment of Disease, THE JOURNAL A. M. A., June 3, 1916, p. 1753.
7. Boerner and Santos: Med. Klin., 1914, **10**, 1062.
8. Cited by Kyaw: Med. Klin., 1912, **8**, 1829.
9. Müller and Weiss: Wien. klin. Wchnschr., 1916, **29**, 249; abstr., THE JOURNAL A. M. A., April 15, 1916, p. 1281.
10. Smith, L. D.: The Value of Anaphylaxis in the Treatment of Gonorrheal Complications, THE JOURNAL A. M. A., June 3, 1916, p. 1758.
11. Miller, J. L., and Lusk, F. B.: The Treatment of Arthritis by the Intravenous Injection of Foreign Protein, THE JOURNAL A. M. A., June 3, 1916, p. 1756.
12. This question is now under investigation, as is also the question of finding a substance which may be given safely in standard doses at certain intervals. The difference in reaction caused by two supposedly equal bacterial suspensions may be very variable, and thus almost necessitates some standard substance if this treatment is to be used by persons other than those familiar with the dangers of a too severe reaction.

be experimentally infected with the gonococcus, and that a fever-producing disease spontaneously cures previously existing gonorrheal infections, there can be but little question that fever artificially produced plays some part in the recovery from these infections.

It cannot easily be determined how much influence, if any, the leukocyte increase in the peripheral circulation has, for when artificially produced in the manner employed here, the fever and hyperleukocytosis are invariably present together.

It is apparent that the usual treatment of gonorrheal arthritis is not satisfactory in all instances when almost daily one can see an ankylosed joint and atrophied muscles following this condition. Should this treatment by intravenous protein injections prove to give permanent results in these conditions, as present data seem to indicate, are we justified in using such measures?

In view of the chronicity of the disease and the destructive complications which commonly arise, it would appear to be a rational procedure when properly used and controlled. Until some substance is obtained, however, whose dosage can be more definitely standardized, it seems that this form of treatment should not be used generally by those not thoroughly familiar with the reaction and the manner of regulating the size and interval of dosage of such as used in the work here reported.

SUMMARY AND CONCLUSIONS

Intravenous gonococcal vaccines have no specific action either as a diagnostic or a therapeutic agent. A similar reaction is secured by suitable injections of meningococci and colon bacilli. There is no noticeable difference in the temperature or leukocyte curves produced after the intravenous injection of the foregoing bacterial suspensions.

The reactions produced in nongonorrheal patients in every way resembled the reactions in gonorrheal patients, there being no noticeable difference in the temperature and hyperleukocytosis produced.

Twenty-four patients with gonorrheal arthritis were treated. Complete recovery or marked rapid improvement was observed in all but two instances. Eleven patients were treated with gonococci with one failure, and eleven patients with meningococci with one failure, while but two were treated with colon bacilli, and both recovered.

Twelve patients with acute gonorrheal epididymitis were treated, and all were apparently completely and permanently cured within a week. There was no difference in results produced with the gonococcus, meningococcus and colon bacillus.

This mode of treatment in gonorrheal arthritis and epididymitis and at least in some instances of acute prostatitis possesses a decided therapeutic value. The results appear to be permanent in character. It possesses, however, little or no prophylactic value against the development of new complications.

Great care must be exercised in the selection of cases, and patients with organic heart disease should not be treated in this manner. No other definite contraindications have been observed.

Clinically the benefit to the patient runs parallel with the fever and hyperleukocytosis produced. It would seem that these factors play an important rôle in the treatment.

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SYPHILITIC BONE AND JOINT LESIONS SIMULATING TUBERCULOSIS *

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Every paper should present its special points in the beginning so that the attention of those really interested may be fixed. This paper aims to give two special points: first, that there is a considerable number of syphilitic cases simulating tuberculosis and other bone and joint lesions that escape recognition; second, that there is a considerable number of cases of bone and joint syphilis that do not give a Wassermann reaction.

In the past year or two I have seen at least eighteen cases of bone and joint syphilis that have given negative Wassermann reactions. Some of these were unmistakable syphilis, as revealed by Roentgen-ray examination. In others the nature of the process could not be told in this manner. In these two groups of cases the clinical histories are strikingly similar in the individual cases in each group. In those frankly syphilitic on Roentgen-ray examination the histories are all the same, pain in the affected part, frequently more marked at night, and little or nothing else. They have each been in the hands of one or more physicians, some of whom have suspected syphilis, but on account of the negative Wassermann they have been regarded as something else. In this group there were four patients, all of whom promptly improved on the administration of mercury and iodids.

In the second group, the larger numerically, the lesions were in and about the joints, rather than in the shafts of the bone as in Group 1, and in these cases, too, there was great similarity in the histories. Each of these cases had been treated by one or more doctors, many of these patients had been in institutions, teaching institutions or hospitals, and their trouble had been regarded as tuberculosis and they were treated accordingly by immobilization or operation.

As case histories are exceedingly boring, I will cite but a few and make these as short as possible.

Case 1.—L. L., Chinese boy, aged 5 years, came to the Stanford University children's clinic with a sore on the back of his hand. He was sent to the surgical clinic, where, after a little time, the diagnosis of tuberculosis of the carpal bones was made and confirmed by the Roentgen ray. He was kept under observation in the surgical department for about a month; then, as the lesion was regarded as tuberculous, the child was transferred to the orthopedic clinic. It was then ascertained that he had had this sore on the back of his hand for about ten months. At this time he had the hand in plaster of Paris, and through a window in the plaster it could be seen that there was some swelling and two sinuses. The sinuses did not seem to be tuberculous, so the boy was put on mercurial ointment and iodids and improved rapidly in spite of the fact that the Wassermann had been negative shortly before the treatment was begun. All plaster was removed, and the boy made a rapid recovery. A guinea-pig injected with some of the material from the sinus remained perfectly well.

Case 2.—F. M., white man, aged 42 years, sustained a fracture of the lower end of the radius in December, 1913, which healed without any trouble. Oct. 7, 1914, the man returned to the surgical clinic, complaining of pain and swelling of the right wrist. There was diffuse swelling, pain and limitation of motion. Roentgen-ray examination at that time showed probable tuberculosis of the wrist, with a possibility of

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

syphilis. He was transferred to the orthopedic clinic six months later after having been treated by immobilization by means of plaster of Paris. As the diagnosis was not clear, the man was allowed to go without any support, to see what would happen. The condition remained the same, certainly no worse. The man had no knowledge of any syphilitic infection and his Wassermann was negative in July, 1915. He was put on mercurial ointment and potassium iodid. His pain and swelling disappeared and motion in the wrist increased. By the middle of August the man was practically well, though with some limitation of motion in the wrist, probably due to his old fracture.

CASE 3.—This case was extremely instructive. A white child, aged 2 years, was brought to the clinic complaining of swelling in the foot and lameness, which had begun about two months before and was gradually growing worse. At that time in the children's clinic syphilis was suspected, but the mother took the child away and did not return for seven months. During these seven months the child had been operated on by two surgeons, independently, and the mother was told by each one that the condition was tuberculosis. When the child was brought back a Wassermann was made, which was negative (there had been no medication). There was a small sinus at this time at the seat of one of the operations. This child was also treated with mercurial ointment. The sinus closed rapidly and the child improved very quickly. This child gained 2 pounds in weight in three weeks after beginning the mercury. In six weeks all the signs and symptoms had disappeared.

CASE 4.—K. H., white, aged 2½ years, was brought to the clinic with swelling of the ankle that had appeared at 2 months of age. This child had been treated at one of the teaching universities over a period of twenty-two months as a case of tuberculosis. The treatment was immobilization by means of plaster of Paris. During this time two sores appeared about the ankle which kept discharging. Wassermann on the mother, father, and child were all negative. There seemed to be a slight fusiform swelling on the fibula, which showed some periosteal thickening on Roentgen-ray examination. The Roentgen-ray report read in part, "suggests syphilis of fibula, possible tuberculosis." On this finding the child was put on mercury and all plaster removed. The sinuses healed quickly and the child improved rapidly. In about two months the symptoms all disappeared and the child was practically well. Treatment was, of course, continued. A fusiform swelling at the upper end of the ulna, discovered accidently in the examination of the child, seemed to remove all doubt as to the nature of the process.

CASE 5.—Mrs. G., aged 32 years, was admitted to the hospital complaining of pain and swelling of the right ankle. Without going into all the details, as this was an extremely obscure case extending over a long period of time, suffice it to say that it was at first considered to be an infectious arthritis, then as tuberculosis of the ankle, and finally as syphilis, on account of improvement under mercury as a therapeutic test, even though the Wassermann was negative. Following an intravenous salvarsan and continuing the mercury this patient has remained entirely well.

These five cases were selected at random, and on account of this method of selection the proportion of ankle cases is unduly high. Practically all the large joints have been represented in this series of cases. Eighteen such cases have been seen, five of the ankle and foot, three of the wrist, three of the hip, one each of the elbow, knee, and back, four of the shafts of long bones, all of which have been under the care of competent physicians, and all of which had been regarded as some condition other than syphilis, most frequently tuberculosis. This would seem to indicate that a large number of such cases are going about, for the experience of no one man or institution is peculiar.

The consideration of these cases brings up several interesting questions: Why do we get so many negative Wassermann reactions in bone syphilis? The percentage I am not able to state, but it seems fairly high, at least 10 per cent. Is it because of the chronicity of the disease, and the lack of amboceptors in the blood, not sufficient being set free to bind the complement? In a manner, it is, perhaps, somewhat comparable to the fact that in a chronic, pyogenic abscess there is no increased leukocytosis. Another point that these cases emphasizes is that fixation of syphilitic joint neither gives relief nor aids in a restitution of the part to normal.

Another point is the large proportion of children in these cases, eight out of eighteen, or really eight out of fourteen, being under ten years of age, quite a contrast to the ordinary teaching that syphilitic joints are not common in childhood.

Another question that comes up is what we are to consider as the most reliable test of syphilis. To my mind it is unquestionably the therapeutic test, and lastly the question of the therapeutic test as a diagnostic method. It is my impression that this should never, or almost never, be omitted in trying to arrive at a conclusion concerning the nature of a chronic process in and about a joint. Exception may be taken to this, but in the present state of our knowledge it seems to be the best test we have for syphilis, and without it one is never sure of his diagnosis.

ABSTRACT OF DISCUSSION

DR. H. W. FRAUENTHAL, New York: Ten years ago, I read a paper on syphilitic bone and joint conditions, and I was surprised at the small amount of literature in America on the subject. The orthopedic institutions in the United States had few cases of bone and joint syphilis in their records. I was also convinced of its rarity in another way; in asking some of the leading specialists in New York to discuss the frequency of these conditions, most of them said that they had never seen bone or joint syphilis. After collecting a number of cases I concluded that syphilis of the bone and joints was much more common than it appeared to be. The reverse was true on the continent. Most continental observers said it was common in children and adults. Fournier says 42 per cent., and Von Hipple 56 per cent., or more than half. In New York I found it almost impossible to convince others that the Roentgen-ray findings meant syphilis, and that antisyphilitic treatment cleared up the joint conditions. After the Wassermann test came into vogue, and was used uniformly in all our cases, we were surprised at the result. We now find that in almost all blood tests we have 15 per cent. of Wassermann positives. These findings are checked up by other laboratories. Where we failed to get Wassermann positives and the roentgenogram indicated that it was syphilis, by giving salvarsan and neosalvarsan, we later often got a positive Wassermann. When the reaction in the child and father was negative, as the father took treatment, and the child did not show a positive Wassermann the mother never was treated. She often showed a positive Wassermann. I have seen persons treated from six months to two years for tuberculous joints in cases regarded as tuberculous who yielded promptly to salvarsan and mercury. Some of these are interesting in their apparent persistence in the appearances of tuberculosis before mercury and salvarsan were tried. One patient, a married woman, had brace treatment for a time. Then as the appearances of the roentgenogram were such that one would think that she would get motion in the joint, she had treatment at another institution for a year and a half with the Zander apparatus and massage, in order to get motion. They failed to obtain any motion in the knee joint. She gave a 4 plus positive Wassermann. A single dose of salvarsan and inunctions over her joint resulted, inside of ten days, in giving her 45 degrees of motion. Another patient, a child with keratitis and Hutchinson's teeth, who had been treated a year and a half at another institution for tuberculous knee joint, under a single injection of

salvarsan and inunctions of mercury for two weeks got a normal range of motion; although there was an inch and a half difference in the two limbs at the beginning of treatment. After four weeks both were alike. I think that if it were a custom to take a Wassermann blood test in the case of every child, and then extend it to the mother and father, a number of cases thought to be tuberculous would prove to be syphilitic.

DR. JOHN RIDLON, Chicago: About thirty years ago, I showed a group of cases before the orthopedic section of the New York Academy of Medicine that I believed to be cases of syphilitic joint disease in children; but not one man there would admit that they were syphilitic, and Dr. Shaffer even went so far as to say that the result of antisyphilitic treatment proved nothing, because Dr. Knight, at the Hospital for the Ruptured and Crippled, had always given mercury and potassium iodid for tuberculous joint disease and had obtained wonderful cures in such cases by this means. That was before we had the Roentgen ray, the Wassermann test or tuberculin test to help us in the diagnosis. There is no question of the fact that some children have syphilitic joint disease who do not give a positive Wassermann reaction; and it is also true that a certain number of syphilitics do have tuberculous joint disease which can be demonstrated to be tuberculous. Therefore, the difficulty is very great in making the diagnosis between a chronic syphilitic joint disease and a tuberculous joint disease. The acute cases are quite different from the chronic syphilitic joint diseases, and the patients rapidly get well under treatment; while the patients with chronic cases get well much more slowly, but do get well much more rapidly under immobilization and mercury and potassium iodid than do patients with ordinary tuberculous joint disease. The diagnosis has to be made by instinct in many cases, instead of by positive clinical facts.

DR. JAMES T. WATKINS, San Francisco: Taken as a whole the paper is important, first, because it points out the danger even painstaking observers run of mistaking a syphilitic bone lesion for a tuberculous condition if they put their trust implicitly in the absence of a positive Wassermann reaction. Those of us who see much bone and joint disease must agree with Dr. Fisher that bone and joint syphilis is much more prevalent in childhood than the literature would seem to indicate. Second, of those cases which are clinically syphilitic, Dr. Fisher finds that 10 per cent. do not give a positive Wassermann reaction. I am of the opinion that to estimate them at 20 per cent. would be to get nearer the mark. Third, of these Wassermann negative syphilitics, those with involvements of the shafts of the bones only present pain worse at night as the one constant symptom. These have, however, definite Roentgen-ray changes. Fourth, in the group which presents joint involvements, the Roentgen-ray changes may be misleading, suggesting tuberculosis. Therefore, all you have to go on is limitation of motion and pain, pain which is not relieved by mechanical protection of the involved joint. The only reliable test is the therapeutic one. If one would reduce the teachings of this paper to a sentence, one would have to go back to the dictum of the pre-Wassermann clinicians and say with them "When in doubt treat for syphilis."

DR. EDWARD HATCH, New Orleans: During the last few years I have seen several cases in adults, some of whom came for frank, and some for indefinite joint pain. The diagnosis was made by the Roentgen ray, and in each case, the Wassermann test was negative. In practically all, the luetin test was positive. Therefore, I should like to ask Dr. Fisher whether he has made tests of the luetin reaction, and whether he considers this an aid in the diagnosis.

DR. EDWIN W. RYERSON, Chicago: It is important, in this connection, to remember that some cases with a negative blood Wassermann may give a positive spinal fluid Wassermann. This is not recognized quite enough, nor is quite enough advantage taken of it. I have seen about ten cases in the last few years in which the blood Wassermann was negative, and the spinal fluid Wassermann was absolutely positive.

DR. WALTER G. STERN, Cleveland: Let us clinicians not forget that Wassermann stated in his original paper that a negative blood reaction is of no diagnostic or prognostic value, unless the reaction continues negative for as long a period as a year to a year and a half; so that one must not be too hasty in ruling out syphilis on the basis of one or two negative serologic examinations.

DR. REGINALD H. SAYRE, New York: I think that the old Scotch verdict, "Not proved," is very applicable to this case; and I only wish to question the writer of the paper in regard to one point. I agree with everything else. This point is that he feels that these patients are not benefited by protection. Now, I believe that in a great many cases it is as wise to give protection to the syphilitic as to the tuberculous joint. I have seen syphilitic hips that went for a considerable period of time with protection and hip splints not undergoing any shortening, and that, when the weight bearing was again permitted, began to telescope. It seems logical, in a soft bone, to relieve it from strain, if you wish to preserve continuity.

DR. C. B. FRANCISCO, Kansas City, Mo.: In the years 1907-1908, at the Hospital for Ruptured and Crippled, before the time of the Wassermann test, in admitting the children we did not label a single case syphilis of the joint, diagnosing these cases as tuberculosis, but I hesitate now to make that diagnosis. I should like to go a point further in these cases, more especially in those involving the bone near the joint, which are very difficult at times to diagnose. Strange to say, some of these patients will get well without antisyphilitic treatment; and you think that you have a tuberculous joint, only to have the patient come back, in the course of a few years, with a chronic syphilitic joint somewhere else, proving that the condition was probably syphilis from the start. Nichols says that 50 per cent. of the cases of latent bone syphilis give a negative Wassermann, and that we should rather rely on the Roentgen ray than on any one other factor for diagnosis. There is one difficulty with the therapeutic test: it will not relieve the endosteal bone changes. Mercury and iodid will relieve the periosteal changes and the gummatous changes, but the endosteal thickening will remain. Another point, advocated particularly in England, is that salvarsan is of no particular value in bone syphilis. Mercury and potassium iodid, in the periosteal and gummatous type, should be the treatment of choice.

DR. LEONARD W. ELY, San Francisco: Opinion in regard to bone and joint syphilis has changed. There used to be skepticism concerning the occurrence of joint syphilis in childhood. The essayist has brought out the lack of reliability of the Wassermann test. There is no reliable test for joint syphilis. The Wassermann test, the Roentgen ray, the clinical course, the history, must all be considered, and then we are not certain about a diagnosis. The gross bone changes in syphilis of the joints are exactly the same as those of tuberculosis. The changes in the synovial membrane are, in gross, also the same. The microscopic and histologic changes are not absolutely reliable. If we find what we consider a tubercle, we say the joint is tuberculous; but the pathologist tells us that we cannot depend on the presence of giant cells, and what we are wont to regard as the characteristic changes of tuberculosis. The guinea-pig test is the most satisfactory; and yet, we have just had a case in our clinic that we have been working over for the past six months, the diagnosis lying between so-called Legg's (Perthes') disease, syphilis and tuberculosis. The patient went to another clinic and was operated on for giant-cell sarcoma. The tumor was sent to a pathologist, who said that it was probably tuberculosis. The material when injected into a guinea-pig gave a negative tuberculous reaction, and we thought that the case was closed. Later, however, the operator told us that he had administered tuberculin and got a reaction, and that he regards the case now as tuberculosis. Personally, in the absence of the animal test, I regard the therapeutic test as the most reliable.

DR. EMIL S. GEIST, Minneapolis: I have had several cases in my practice in the last few years in which the diagnosis of bone or joint syphilis was made. The history was positive, the Wassermann reaction was also positive, and the roentgenogram showed definite joint lesions; yet when the therapeutic test was applied, it did not give any results. When the physician who had correctly diagnosed the case came in, we told him that we thought we were dealing with tuberculosis or some other bone or joint trouble. Nevertheless, the cases

turned out to be syphilitic. It has been my experience that in some of these cases, we must push the treatment to the limit, and that really the therapeutic test had not been tried when it had been found wanting in the minds of these men. The point that I would make is that bone and joint syphilis is more resistant to treatment than other forms and I have been accustomed to transfer these cases to the syphilologist, because he has been handling more syphilitic remedies and knows better how to apply them than I.

DR. HENRY LING TAYLOR, New York: Not infrequently, when the Wassermann is negative in the child, it may be positive in one or both parents; this has been found true in several cases lately. It pleased me very much to hear one of the speakers say that the old fashioned mixed treatment is more reliable than salvarsan in bone and joint cases. I have also found this to be the case, and it does not seem to be generally known. Some men think that they are giving antisyphilitic treatment when they give potassium iodid, but this is a delusion; mercury is the active agent.

DR. ROBERT W. LOVETT, Boston: Most of the remarks have been coincident with my own experience. One point I should like to mention is the stimulation of chronic osteomyelitis by syphilis. I have had patients with chronic osteomyelitis who gave a positive Wassermann reaction and improved under antisyphilitic treatment. About a year ago I went through some plates with Dr. Post, professor of syphilis at Harvard University, who has given great attention to the appearances in bone and joint syphilis. Some of the plates showed bone syphilis very clearly. Some cases that we had diagnosed as osteomyelitis, he thought were characteristic of syphilis. Many of them were old plates.

DR. A. E. HORWITZ, St. Louis: We see a surprising number of these cases in St. Louis, probably because we look for them. In most of these cases the Wassermann is negative, the percentage of negative results being fully 50 per cent.; so we do not, as a rule, rely on this test, but look for other essential points. In the congenital form, there is usually multiple joint involvement; so we have come to rely on this. It is essentially polyarticular, not like tuberculosis, with one or two joints involved, but, in most cases, quite a number of joints. One strong point is the shaft involvement. In the joint where the involvement occurs, by looking carefully, we can find some slight involvement in the opposite end of the shaft. If we do not, we find a symmetrical involvement of the opposite limb in the same joint. That has been very striking and very often demonstrated. In spite of a negative Wassermann reaction, we can, therefore, make the diagnosis, because of the fact that the disease improves under antisyphilitic treatment. Another point is that in the congenital cases, which are essentially polyarticular, the condition is not entirely articular, but extends into the shaft somewhat; and even in the acquired form of syphilis, wherever there is bone involvement, it also extends into the shaft, and possibly from the shaft to the joint. So much is this so that we tried to claim that acquired syphilis is not an actual joint condition, but an extension from the shaft, while the congenital form is joint involvement proper, extending to the shaft.

DR. ARTHUR L. FISHER, San Francisco: My object in bringing up the subject was to set forth the fact that the Wassermann test is unreliable in two ways: first, that in a large proportion of syphilitic cases one gets a negative Wassermann; and second, and more important, because of the interpretation given by the profession at large to the Wassermann, that a negative Wassermann means no syphilis. We know that this is not true, and I have tried to bring out the fact that all these patients have been in the hands of competent physicians who, on account of the negative Wassermann, regarded the cases as not syphilitic. In answer to the remark about the spinal fluid Wassermann, I would say that it is unquestionably a fact that it happens with great frequency that a blood Wassermann is negative, and a spinal fluid Wassermann positive. These cases, however, are usually central nervous system syphilis—tabes or cerebrospinal syphilis; and you get in them the so-called Charcot joints. I have not seen any joint involvement, except these, in such cases. With regard to the protection of the joint, I would say that it does not give relief of symptoms in these cases, and does not tend to a restoration to normal. Of course, if a diseased area is bearing weight it is wise to protect it. I am glad that the subject of the histology of the condition was brought up, because there is a broad general statement that can be made in regard to it, and that is, that without finding the tubercle bacillus, you cannot be sure whether you are dealing with syphilis or tuberculosis. You can usually, if you look at a slide, say, "This is a tubercle" or "This is a gumma"; but you can never be sure, and even an expert pathologist will not usually give a definite diagnosis on this point. Dr. Lovett brought out an interesting point, the difference between syphilis and chronic pyogenic osteomyelitis. We have been coming to believe that when pyogenic osteomyelitis is multiple, it is usually in a syphilitic patient, either congenital or acquired; and you will usually find some evidences of syphilis in the family in these cases.

REPORT OF A CASE OF STRANGULATED DIAPHRAGMATIC HERNIA, WITH OPERATION AND RECOVERY

CHARLES E. HAWKES, M.D., PROVIDENCE, R. I.

In an article on stab wounds of the diaphragm, with diaphragmatic hernia or evisceration, Dr. Charles C. Green[1] has reported a total of 123 cases, collected from the literature, together with six cases of his own.

To this list I wish to add a case of my own, in which the patient was operated on at the Rhode Island Hospital, this summer, during my term of service. This case was especially interesting from the fact that the hernia became suddenly strangulated, and the patient's convalescence was complicated by a prompt attack of delirium tremens.

The patient, A. Le C., man, aged 49, single, white, laborer, well developed and well nourished, was brought to the Rhode Island Hospital in one of its ambulances, Nov. 17, 1915. He had been stabbed by his roommate, during an argument as to who should do the cooking. The wound was in the left eighth intercostal space, nipple line, about 3 cm. in length and 1 cm. in depth, which bled readily. No fracture of the ribs could be detected, nor perforation of any cavity, nor evidence of internal injury. The patient complained of extreme tenderness about the cut. The incised wound was treated in the accident room with iodin, and sutured with three silk sutures. Three days later, the wound was clean, the patient's condition was satisfactory, and he was discharged from the house, and referred to the outpatient department for any further necessary dressing and attention.

July 21, 1916, the patient was readmitted to the hospital in the ambulance. His history was as follows: Since his previous discharge from the house, he had felt well except for occasional belching of gas, to which he paid no attention. He complained of no other gastric symptoms. He had been a heavy drinker.

Two hours before his second admission to the hospital, while at work, he was seized with a sudden, severe attack of pain, in the epigastrium. He vomited once, soon after the onset of the attack. The pain continued with great severity. He managed to get to a drug store, where he collapsed.

The man was in extreme agony. His face was markedly cyanotic, the pulse almost imperceptible, the skin cold and clammy. A general examination was not made, because of his extremely poor condition.

The abdomen was exceedingly tender in the epigastrium, and the rectus muscles were rigid to a level with the umbilicus, below which point they were much less tense. It was tympanitic all over. Distention was limited to the epigastrium. The liver dulness was not obliterated. Below the umbilicus the abdomen appeared somewhat sunken, fairly soft on palpation and not tender. On the left side, the tympany extended to the fourth intercostal space. Owing to the patient's critical condition and to the imperative need

1. Green, C. C.: Stab Wounds of the Chest Involving the Diaphragm, with Diaphragmatic Hernia or Evisceration, THE JOURNAL A. M. A., July 15, 1916, p. 178.

for rapid therapeutic action, all further examinations, including that of the chest, were postponed.

He was given a quarter of a grain of morphin subcutaneously, and 600 c.c. of saline solution intravenously. Heaters were applied externally. He responded quickly to this stimulation, the cyanosis diminished, and the pulse became stronger and regular. One hour after his admission to the hospital, he was sent to the operating room. As the patient had been free from all symptoms referable to his previous stab wound for eight months, and since his present attack came on suddenly and with severity in the epigastric region, and followed an alcoholic history, a diagnosis of perforated duodenal ulcer was made. The white blood count was 17,000.

Under ether anesthesia, a high right rectus incision was made through the abdominal wall. No gas or fluid was encountered when the peritoneal cavity was opened. The duodenum, except for a few veil-like, red adhesions, was normal, as was also the gallbladder. The right lobe of the liver was somewhat enlarged. The appendix was short, small and atrophied. The ileum was collapsed. The right kidney was normal. The omentum was not discernible. On examination of the stomach, no adhesions or thickening of its walls could be detected. When an attempt was made to pull it down into the wound for a more thorough inspection, for some reason it seemed to be firmly anchored behind and could not be drawn down. Further examination behind the stomach disclosed intestines passing through a vertical rent in the left leaf of the diaphragm. To facilitate the operation, an incision was made transversely across the left part of the abdomen, to the extent of 5 to 6 inches from the upper end of the original incision, and the triangular flap laid back, making a large square opening to work through. The intestines were found so firmly wedged in the wound of the diaphragm that this also had to be enlarged 1 or 1¼ inches, making the entire opening about 2 or 2½ inches. Fairly firm adhesions between the intestines and the hole in the diaphragm had to be broken up before the hernia could be reduced. The transverse and part of the descending colon, the omentum, and about half of the small intestines were finally withdrawn from the left chest, through this rent in the diaphragm. The omentum was black from extravasation of blood, and was bleeding from many small points. It was somewhat adherent about the opening in the diaphragm, and had to be forcibly freed and tied in places. The mesentery of the intestines also contained large areas of extravasated blood and abrasions. The jejunum was distended, and dark in color. The condition of the omentum, mesentery and jejunum was undoubtedly due to the sudden strangulation of the parts, through the traumatic opening in the diaphragm.

An interesting point was the ease with which the apex of the heart could be palpated and the pulsations counted through the diaphragmatic rent.

The edges of the diaphragmatic wound were seized with Kocher's clamps, and approximated with through-and-through sutures of No. 2 chromic catgut, doubled. To facilitate haste, a number of through-and-through silkworm-gut sutures were taken in the triangular abdominal wound, supplemented by chromic catgut sutures through the fascia, muscle and peritoneum, and silk in the skin. No drain was used.

The nurse in the laparotomy room reported that the patient came from the operating room at 7 p. m. in poor condition. He was given a shock enema, which was retained. Camphor in oil, 30 drops, was given subcutaneously at 7:30, and every two hours thereafter. Caffein sodium benzoate, 2 grains, was given subcutaneously at 8:30 and every two hours. Morphin, ¼ grain, was given at 8:45 subcutaneously, and repeated in four hours. One pint of Murphy drip saline was given by rectum at 11:30 and retained. The patient voided at 1 a. m. He had a good deal of pain all night. The following day, the stimulation was continued, and in addition two high enemas of Epsom salt, glycerin and water were given with good gas results. The patient talked irrationally at times during the night.

The next day, July 23, he became restless and delirious, got out of bed and walked around the room, insisting that he was all right and desired to go home. He was transferred to the quiet ward, where his delirium tremens required large doses of sedatives, and some whisky to control. Here he remained under close observation for seven or eight days before it was considered safe to return him to the laparotomy room. Part of the time he had to be restrained to be kept in bed.

August 1, the stitches were removed and two small plain rubber tissue drains were inserted down to the muscle, to drain small collections of seropus from the incision wounds. He slept well from now on.

August 14, the rubber tissue drains were left out. The patient was given a back rest, in bed.

August 16, the patient was out of bed, in a chair.

August 19, he was discharged from the hospital practically cured. He returned several times, at intervals of three or four days, for dressings. The two sinuses, where the drains had been inserted, eventually closed.

The temperature chart showed the following: Temperature rose to 103 the third night after operation, pulse 115 and respiration 34, during his mental excitability. Normal was soon reached, and the temperature touched 100 on only three or four occasions afterward, falling to normal or 99 the next day.

The urine, July 22, showed a rusty color, and strong acidity, specific gravity 1.020, albumin a trace, and sugar absent. In the sediment were numerous granular casts, a few squamous epithelial cells, and an occasional white blood cell.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(*Continued from page 287*)

CALCULI IN CHILDREN

That urinary calculi occur in children is, of course, recognized; but a summary of the subject by Collins[62] shows that one investigator found "that 45 per cent. of 5,900 cases of calculus occurred in children, and that children under five years are especially prone to the condition." Collins finds that children resemble adults in that renal calculi occur in boys twice as frequently as in girls, the majority of cases being found in children under 2 years of age. Holt says that small renal calculi are very common in infants, and though these calculi may be voided without symptoms, other observers are of the opinion that renal colic in infants is not rare.

The causes of these deposits in children are probably too much nitrogenous food, too much calcium in the food, perhaps too much phosphate in the food or medication, and often an insufficient amount of water. Perhaps frequently there are the added factors of bacterial infection and delayed passage of urine to the bladder. Gout in the parents can scarcely be called a predisposing cause. Bacterial infection, general and later focal, is doubtless a frequent cause. With bladder calculi, renal calculi may be presupposed. When blood or pus is found in the urine, a careful examination should be made.

Sudden pain, apparently abdominal (in a child too young to describe its symptoms), vomiting, and suppression of urine, or bloody urine, suggest a kidney stone; sudden high fever added to these symptoms indicates a kidney infection. A history of gravel, or of passage of urine showing a quantity of sediment, may aid in the diagnosis. Roentgenograms should be made before operative interference is undertaken.

62. Collins, A. N.: Urinary Lithiasis in Infancy, Am. Jour. Dis. Child., October, 1913, p. 245.

It is very difficult to decide whether in young children morphin or codein would mask a necessary symptom in making a diagnosis — as in appendicitis or intestinal obstruction, for instance. At the same time, we are not justified in allowing a child to suffer agony when an adult would insist on the alleviation of his pain. Therefore when the renal colic has been diagnosed, the pain must be diminished. Hot baths may cause relaxation, with a dose of codein proportionate to the age of the child; a few whiffs of chloroform may also be needed. Long continued use of chloroform, however, is not justifiable.

A calculus which has not been passed should be sought by the Roentgen ray and surgically removed, as the lodging of such an obstruction in any part of the urinary tract is a greater menace to a child than to an adult.

The prognosis is unfavorable as many cases necessarily remain undiagnosed until necropsy. Surgical treatment of diagnosed cases, however, should give more satisfactory results.

The child who has passed a stone should be given the following prophylactic treatment: a properly balanced diet, regulation of the bowels, and plenty of water.

BILATERAL KIDNEY STONES

In children, as well as in adults, we frequently find that if stones are located in one kidney, the same condition will be discovered in the other. Speaking conservatively, this is true of 20 per cent. of the cases. This is necessarily true as any urinary or digestive disturbance has a tendency to affect both kidneys unless one kidney is made more susceptible by some localized predisposing cause. Hence, before operation both kidneys must be examined by the Roentgen ray. When stones are found in both kidneys, operation on either kidney is accompanied by greater hazard. Of course the more weakened either or both kidneys are from pus, hydronephrosis or nephritis, the graver is the prognosis. Whether or not the two kidneys in these bilateral cases should be operated on at once is a nice medical and surgical question; careful consultation, tests of function and of the blood for retention nitrogen must make the decision.

HEMATURIA

Hematuria, or blood in the urine in tangible amounts, should always be investigated, as it may be of serious import. Traces of blood, which are frequently found, may lead to the discovery of various disease conditions. Real hematuria may appear as clear blood or blood mixed with urine; or the urine may appear smoky, as occurs when the kidney substance is the source of bleeding, the blood being thoroughly mixed with urine, albumin and débris. Small amounts of blood may also be found in the urine in chronic nephritis of all types. Other conditions that cause or allow hemorrhage into the urinary canals are traumatism; calculi; cystic degeneration of the kidneys; carcinoma or tuberculosis of any part of the urinary tract; some blood diseases, especially hemophilia; acute infections of the malignant type; acute nephritis; septic infarcts of the kidney substance; and more rarely echinococcus infection. Blood may of course also appear in the urine owing to bleeding from the ureters, bladder, prostate or urethra. Rarely exposure to severe cold may cause blood to appear in the urine in certain individuals. Cardiac insufficiency, with passive congestion of the kidneys, congestion of one kidney due to displacement or to pressure on its blood vessel, a serious lordosis, or serious disturbances of the liver may cause kidney hemorrhage. Cases of hemorrhage have been reported in which there was localized dilatation of the blood vessels. This condition, which is rare, has been termed renal angioma or renal varix. Hematuria as well as hemoglobinuria may sometimes be caused by certain forms of pernicious malarial fever.

Elsner[63] found hemorrhage of the kidneys in 100 per cent. of acute tubal nephritis, in 100 per cent. of secondary congested kidney (passive hyperemia), in 33 per cent. of chronic tubal nephritis, and in 14 per cent. of chronic interstitial nephritis. These surprisingly high percentages give evidence of the frequency of hematuria, and should warn against operative interference except as a last resort. A floating kidney which is bleeding should be anchored, since a kidney so displaced as to cause interference with the outflow of blood from the renal vein must be passively congested.

It has been suggested that a kidney passively congested for some time becomes enlarged through dilatation of its blood vessels and is subjected to pressure from its capsule. Decapsulation would relieve this passive congestion and the resulting hemorrhage.

Blood issuing from the urethra will generally precede the passage of the urine or appear in the first jet. If it comes from the posterior urethra or from the prostate gland region, it is apt to follow urination. Blood coming from the bladder may be well mixed with urine, it may appear with strings of mucus, or it may follow urination. Blood from the ureter or from the pelvis of a kidney may follow urination, or the urine may be more or less mixed with it. As stated, blood thus occurring with nephritis generally causes a smoky urine, although clear blood may come from some lesion of the kidney substance.

Urethroscopic and cystoscopic examinations may disclose the origin of the blood. If its source is found to be in the kidneys, the passage of ureteral catheters will show the kidney from which it comes. Roentgenograms may reveal a calculus in the pelvis of a kidney or in the ureter as the cause of the hemorrhage. If the bleeding is due to a stone, absolute rest will usually cause a cessation. If it is due to tuberculosis — a common cause — or to some kidney growth, rest will probably not be efficacious; but, if the hemorrhage is localized in one kidney, surgical intervention may be required. Before resorting to this measure, however, one should take into consideration the health of the other kidney, the seriousness of the bleeding, and the gravity of the symptoms. If the bleeding is due to a displaced kidney, rest and abdominal support will usually remedy it. If it is due to circulatory insufficiency, cardiac tonics and rest will generally cure the condition, as whatever improves the system will of course diminish the hematuria.

Gallic acid has at times seemed to check renal hemorrhages due to disturbances of the blood or to a growth in the kidney. The use of gelatin and calcium chlorid has sometimes been beneficial, as has also been dry cupping over the offending kidney. Cotarnin hydrochlorid (stypticin) and cotarnin phthalate (styptol) have been used with apparent success in some cases of bleeding from the kidney substance. Injections of epinephrin solutions into the pelvis of the kidney

63. Elsner: New York State Jour. Med., 1913, **13**, 144.

through the ureteral catheter has suppressed bleeding for varying periods. Blood serum, the administration of suprarenal gland, or the administration of thyroid gland sometimes will prove effective when the hemorrhage is due to a hemophilic condition.

It should be emphasized that the most frequent causes of kidney hemorrhage are renal stone, tuberculosis and circulatory insufficiency. It is associated with acute nephritis. When accompanied by chills and fever, even though other evident sepsis is lacking, a septic infarct is probable. It should also be remembered that hexamethylenamin, which is now so frequently given, may cause hematuria. Occasionally blood vessel pressure from an abdominal tumor, or in pregnancy, may produce kidney hemorrhage.

ESSENTIAL HEMATURIA

Before applying this designation to a kidney hemorrhage, one must be certain that this particular condition may not come under some other heading. Many unexplained hematurias are thus termed, and Braasch[64] states that essential or unexplained hematuria is not a rarity. He found that 75 per cent. of seventy-seven cases were in males, the majority of whom were between 40 and 50 years of age. The duration of this intermittent hematuric condition varied, sometimes continuing for many years. Braasch found that high blood pressure was not a usual factor. These attacks, in some instances, were accompanied by pain. If the bleeding is preceded by a chill, if there is any pus or much albumin, a localized kidney inflammation is the probable cause of the hemorrhage. The presence of bacteria signifies perhaps a focal infection. Braasch found that in some cases injections of epinephrin solution, 1:2,000, into the pelvis of the kidney, while not curative, would stop the hematuria for a long time. He advises nephrectomy in persistently recurrent essential hematuria, when one kidney is healthy, having found nephrotomy of no value in this type of bleeding. It should be emphasized that before nephrectomy is employed in these cases, all less severe measures must be thoroughly tried. If bleeding then does not cease, the patient becoming exhausted and anemic, removal of the kidney is justifiable. Syphilis in some instances causes hematuria, and proper treatment of this disease may be the remedy required.

The pathology of these bleeding kidneys generally discloses the fact that the blood flows from the glomeruli; and that there is some kidney degeneration — a fibrosis not unlike that due to prolonged passive congestion or to heart insufficiency, as pointed out by Spitzer.[65]

It should be noted that, in many cases called "essential hematuria," plausible causes for the bleeding have later been discovered. It should also be noted that chronic nephritis may be present for a long time, causing hemorrhage even though the urine shows, on repeated examinations, no albumin and no casts. Such a condition may occur when there is arterial degeneration.

HEMOGLOBINURIA

In this condition the coloring matter of the blood appears in the urine without the corpuscles, the urine being dark and containing blood pigment and broken down red corpuscles. It may occur in diseases of the blood, such as pernicious anemia and purpura; in conditions causing the destruction of the red corpuscles, such as pernicious or malignant infections; in pernicious malaria, or in hemoglobinuric fever, and it may occur when nontested blood is transfused into an anemic patient or into a patient who has suffered hemorrhage. The latter incident rarely occurs at the present time, as it is now recognized that the donor's blood must be tested before transfusion can with safety be performed. Besides the causes just enumerated, a hemoglobinuria may be produced by poisons of the phenol type, such as coal tar products and potassium chlorate, and also by some snake poisons. Carbon monoxid (illuminating gas) poisoning is a frequent cause. Chloroform anesthesia may occasionally bring about this condition, as may also large doses of quinin. It is not necessary to discuss, in this connection, whether it is more hazardous to allow a pernicious malarial fever with kidney hemorrhage to run its course, or to decrease the fever by administering large doses of quinin, which will tend to increase the flow of blood.

Some time ago it was shown by Pearce, Austin and Eisenbrey[66] that there must be a concentration of hemoglobin in the blood of 0.06 gm. per kilogram of body weight before hemoglobin appears in the urine. If there are very large amounts of hemoglobin in the blood stream, bile pigments will also appear in the urine. A limited amount of the hemoglobin débris is cared for by the liver, but when this amount is exceeded the excess débris is secreted by the kidneys. Hemoglobinuria is frequently accompanied by hematogenous jaundice.

Paroxysmal hemoglobinuria is rare, but periodic attacks, with oxyhemoglobin and methhemoglobin in large amounts in the urine, may occur. Men seem to be more frequently afflicted with this form of hemoglobinuria than women. These attacks may be induced by cold, and in some cases by syphilis. They may be preceded by a chill and followed by a fever, with oft recurring myalgic pains. The urine will probably not continue hemoglobinuric longer than twenty-four hours. Malarial fever may be eliminated as producing such an attack; however, there usually is some hidden but definite cause.

PYURIA

Pus may appear in the urine in amounts varying from very small to large. A vaginal cause of pus in the urine in females can readily be excluded by catheterizing. In urethritis and cystitis the pelvis of the kidney is more frequently involved in the female than in the male, gonorrhea rarely ascending to the kidney in the male.[67]

The bacteria most frequently found in urine are the streptococci, staphylococci, gonococci, colon bacilli, pneumococci and tubercle bacilli.

C. Beeler and H. F. Helmholz[68] find, after examining 118 specimens of the catheterized urine of sixty-one female children, that colon bacilli are not normal inhabitants of the female urethra, but in extra-urinary infections occurring during the first two years of life the colon bacillus is frequently found in the female urethra; in girls over two years of age the urine is usually free from colon bacilli.

(To be continued)

64. Braasch, W. F.: Clinical Observations on Essential Hematuria, THE JOURNAL A. M. A., Sept. 20, 1913, p. 936.
65. Spitzer, W. M.: Continuous Painless Renal Hemorrhage and Its Treatment, THE JOURNAL A. M. A., Dec. 12, 1914, p. 2110.
66. Pearce, Austin and Eisenbrey: Jour. Exper. Med., 1912, **16**, 575.
67. Sanders: New York Med. Jour., June 24, 1916, p. 1226.
68. Beeler, Carol, and Helmholz, H. F.: The Bacteriology of the Urine in Health Children and Those Suffering from Extra-Urinary Infections, Am. Jour. Dis. Child. October, 1916, p. 345.

THE TREATMENT OF BURNS BY PARAFFIN

THE JOURNAL has previously commented on the secret proprietary preparation "Ambrine," exploited in this country some years ago as "Hyperthermine" and "Thermozine," and more recently given prominence in this country by extensive newspaper comment. In the *British Medical Journal*, Jan. 13, 1917, Lieut.-Col. A. J. Hull of the Royal Army Medical Corps, who has investigated the treatment, reports that he believes that under this treatment slight burns heal with singular rapidity, and persons severely burned recover who would not have recovered so completely under ordinary methods of treatment. He believes that the results obtained depend almost wholly on mechanical factors: the protection of the burn from the air, the protection of the newly formed granulations from damage, the splintlike effect of the wax in holding the damaged tissue immobile and at rest, and the heat of the applications, which may encourage the lymph flow and the blood supply to the new capillaries. The paraffin cast likewise provides a suitable nidus in which epithelium will proliferate. Dr. Hull, believing in the efficacy of the treatment, experimented to find a preparation which would be equally efficacious. Laboratory experiments were made with a view to impregnating paraffin with various substances and to produce a paraffin possessing the requisite melting point, plasticity and adhesiveness. He found that paraffin of a suitable melting point, if heated to 130 C. by superheated steam, became mobile and workable and was lowered 2 degrees in melting point. It is this superheated steam which is the essential process in the manufacture. The results of the application of hard paraffin — treated with superheated steam — to burns seemed indistinguishable from those of "Ambrine."

Dr. Hull claims that better results are obtained by the addition of certain antiseptic and stimulating substances. The wounds become clean more rapidly, pain is decreased, and the offensive smell associated with the "Ambrine" dressings is avoided. It was found necessary to change the treatment of sluggishly healing burns treated by "Ambrine" to a paraffin containing an antiseptic. The change was always beneficial.

Dr. Hull finally succeeded in preparing a formula which in numerous cases gave excellent results. Severe burns healed without cicatrices and without extensive scarring. The treatment was practically painless. He found that burns became clean more rapidly under this formula than under the "Ambrine treatment." The mixture, which he calls No. 7 paraffin, and the method of treatment are thus described:

The paraffin treatment is begun at the first dressing; very exceptionally, in very septic burns, the paraffin is replaced by hot boric fomentations for two days after two days of paraffin treatment.

The burn is washed with sterile water and dried. The drying is accomplished by placing a dry piece of gauze over the burn. An electric drying apparatus, such as is used by a hairdresser for drying hair, if available, is a convenient method of drying the burn.

The burn is next covered with a layer of paraffin at a temperature of 50 C. The No. 7 paraffin has a melting point of 48 C. The temperature may be estimated by waiting until the wax shows a solidifying film upon the surface. A broad camel-hair brush, sterilized in wax, has been found to be a rapid and painless method of applying the paraffin. A spray may be used, but sprays readily get out of order, are troublesome to use, and the dressing takes longer. In theory a spray should be used in order to prevent any danger to the epithelium. In practice, we have found a brush, skilfully used, sufficiently satisfactory. Sprays are indicated in very painful cases. A metal spray of rather large bore should be employed. The spray must be immersed in hot water during use.

A thin layer of cotton wool, cut the same size as the area of the burn, is placed over the wound after the first layer of paraffin has been applied. This layer of wool is covered with a second layer of paraffin. The wool is cut in thin sheets and pressed between layers of paper in order to obtain thin layers of wool. The dressing is completed by applying wool and bandage. The burns are usually dressed daily. In the later stages, when the burn is clean and only a small amount of pus is formed, the dressing is changed every forty-eight hours.

Blisters are not interfered with in any way at the first dressing; the paraffin is applied after washing the burn. At the second dressing the dead layers of skin are cut away. Sloughs usually separate after a few dressings. The separation of sloughs is accelerated by applying a layer of jaconet over the wool and paraffin beneath the wool and bandage dressing.

FORMULA FOR NO. 7 PARAFFIN

Resorcin	1 per cent.
Eucalyptus oil	2 per cent.
Olive oil	5 per cent.
Paraffin molle [soft]	25 per cent.
Paraffin durum [hard]	67 per cent.

Melt the paraffin durum, and add paraffin molle and olive oil. Dissolve the resorcin in absolute alcohol (soluble 2 in 1), add the alcoholic resorcin, and lastly add the eucalyptus oil when the wax has cooled to about 55° C.

A smaller amount of resorcin may be used. The whole of the resorcin does not remain in suspension, and we have used a paraffin containing 0.25 per cent. resorcin with good results.

Difficulty having been experienced in obtaining resorcin in large quantity, beta-naphthol, which has the additional advantage of being a cheaper antiseptic, has been substituted for resorcin in more recent preparations, as follows:

Beta-naphthol	0.25 per cent.
Eucalyptus	2.0 per cent.
Olive oil	5.0 per cent.
Paraffin molle [soft]	25.0 per cent.
Paraffin durum [hard]	67.75 per cent.

We have employed No. 7 paraffin in certain stages of the treatment of trench feet. The mode of application of paraffin to the ulceration following frostbite is in every respect similar to the application of paraffin in the treatment of burns, and the results have been equally satisfactory.

Experimentation on Man.—The limits of justifiable experimentation on our fellow creatures are well and clearly defined. The final test of every new procedure, medical or surgical, must be made on man, but never before it has been tried on animals. There are those who look on this as unlawful, but in no other way is progress possible, nor could we have had many of our most useful but very powerful drugs if animal experimentation had been forbidden. For man absolute safety and full consent are the conditions which make such tests allowable. We have no right to use patients entrusted to our care for the purpose of experimentation unless direct benefit to the individual is likely to follow. Once this limit is transgressed, the sacred cord which binds physician and patient snaps instantly. Risk to the individual may be taken with his consent and full knowledge of the circumstances, as has been done in scores of cases, and we cannot honor too highly the bravery of such men as the soldiers who voluntarily submitted to the experiments on yellow fever in Cuba under the direction of Reed and Carroll. The history of our profession is starred with the heroism of its members who have sacrificed health and sometimes life itself in endeavors to benefit their fellow creatures. Enthusiasm for science has, in a few instances, led to regrettable transgressions of the rule I have mentioned, but these are mere specks which in no wise blur the brightness of the picture—one of the brightest in the history of human effort—which portrays the incalculable benefits to man from the introduction of experimentation into the art of medicine.—Osler: *Transactions of the Congress of American Physicians and Surgeons*, 1917, **7**, 7.

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SATURDAY, FEBRUARY 3, 1917

IPECAC AND DYSENTERY

Ipecac is the root of a Brazilian herb. It is said to have been in common use in its native country long before it was brought to Europe by Piso at about 1650. Shortly afterward a charlatan by the name of Adriaan Helvetius placarded Paris with the announcement that he had a cure for dysentery. Hearing of this, Louis XIV summoned him to treat the dauphin, who was suffering from this disease. The patient recovered, and the formula, which Helvetius is said to have obtained from a physician in the Netherlands, was purchased by the government for 1,000 louis and made public. Ipecac was one of the ingredients of the formula, and from that day to our time ipecac has been used as a remedy in dysentery, but with varying fortune, it being vaunted by some as a specific and condemned by others as useless. Under any circumstances the vomiting was a heavy drawback.

Until not so very long ago dysentery included all diseases in which blood and mucus appeared in the stools; now we know at least two etiologic varieties, and there is no doubt that the success or failure of the ipecac treatment of the old days in large measure depended on what kind of dysentery was being treated. In India the use of ipecac in dysentery began early and was kept up, as we learn that in 1881 massive doses were used not only in uncomplicated cases but also in cases with abscess of the liver.[1]

In 1817 Pelletier isolated from ipecac the so-called active principle, the alkaloid emetin, which also was used in dysentery with success, at least by some, and in 1910 Vedder in Manila demonstrated that emetin, even in highly dilute solutions, kills *Amoeba histolytica*, the cause of amebic dysentery. Shortly afterward Rogers[2] in India was able to cure acute amebic dysentery in a few days by means of a few hypodermic doses of emetin hydrochlorid. This striking therapeutic triumph has been repeated innumerable times, and is being repeated daily in all parts and corners of the world where amebic dysentery prevails, and emetin is today accepted as an almost ideal specific, being harmless to the body in doses which kill the amebas. In a solution of 1:10,000 it is amebicidal at once, at 1:100,000 in two minutes. Experience indicates that by its use amebic abscess of the liver can be prevented and even cured. Sometimes it is difficult to distinguish between amebic and bacillary dysentery, especially, of course, in the absence of good laboratory facilities; under such circumstances emetin may be of diagnostic value because improvement follows its use in two or three days if the case is amebic. According to Ross, the slightest suspicion of dysentery in Mediterranean troops now calls for the immediate injection of emetin on the chance that it will destroy an enemy whose presence there is ground only to suspect. Like the few, very few, other specifics we have, emetin has its limitations. The promptness and completeness of its specific curative action stand in direct proportion to the acuteness of the attack; in neglected cases in which the destructive trenching and mining of the intestinal wall are very extensive and associated with mixed secondary infections, and in so-called compound cases of dysentery, the emetin treatment may fail of complete success. Emetin also seems powerless against the encysted ameba and hence of but comparatively little influence in ameba carriers. As a direct cure for pyorrhea it seems to have failed, not because it does not act on the amebas which are found in the pyorrheal pockets, but because pyorrhea is not caused by amebas, as asserted by some prematurely. But take it all in all there are few drugs, if any, that have such an interesting, eventful and withal successful history as ipecac.

1. Ross, Ronald: The Treatment of Dysentery, Lancet, London, 1916, **1**, 1.
2. Rogers, Leonard: Dysenteries: Their Differentiation and Treatment, New York, Oxford University Press, 1913.

SOME FACTORS IN MILK PRODUCTION

Recently the view that the mammary gland tends to manufacture a specific product, milk, which is in no sense a mixture of unaltered food components absorbed in part unchanged and reexcreted in the same form, was discussed in THE JOURNAL. This must not be interpreted as meaning that milk production is in ultimate analysis entirely independent of the diet. If constructive units of a suitable sort are entirely lacking in the ration, they will either be derived from the body tissues themselves or milk production must ultimately fail. In this sense the quality of the proteins furnished to a lactating individual is of decided moment; but whatever the protein may be, the milk proteins produced are representative and characteristic so long as they are produced at all.[1]

Again, in the case of the fats, it is doubtless true that abnormal butter has been produced by feeding a cow large quantities of vegetable oils, such as cottonseed oil, linseed oil and sesame oil; but such feeding conditions cannot be regarded as normal. It has been pointed out that the food fat does not go over into the

1. The Relation of Proteins to Milk Production, editorial, THE JOURNAL A. M. A., Nov. 4, 1916, p. 1374.

milk so readily in any considerable quantity without "metabolic supervision," as many are inclined to believe.[2] The mammary gland attempts at least to secure a characteristic output despite the occasional "escape" of unusual components. Some of these, like butter color, doubtless owe their presence in the milk to the accident of their unusual solubility in fats rather than to any other special selective circumstance.

If further evidence of the persistence of the mammary gland to produce the normal milk constituents under unusual conditions were demanded, it might be found in recent investigations at the University of Missouri.[3] The data derived from a study of the influence of the plane of nutrition on the mammary functions seem clearly to warrant the general conclusion that normal milk and butter are to be expected when the cow is on a supernormal plane of nutrition as well as when the plane of nutrition is normal, provided there are no other influencing factors, such as specific feeds.

It has been remarked that underfeeding, for a time at least, need not alter the character of the milk so long as the body stores can be drawn on for needed constructive units. Eckles and Palmer have now shown, on the other hand, that overfeeding, that is, an increase in the plane of nutrition above normal, fails to raise the flow of milk above the normal except in certain limited cases, and in these to a small degree at most. These facts bring to mind the contention that the secretion of milk may be essentially under control of hormone stimulation, with nervous factors participating in a minor degree. The Missouri investigators believe that their newest results admit of interpretation on the basis of this current hypothesis. They summarize them as follows: The chemical stimulus for milk secretion is the predominating stimulus immediately following parturition, and continues to be so for a period of time, the limit of which is not yet brought out. The chemical stimulus for milk secretion is the stimulus which fixes the maximum milk flow for each individual animal. It is more or less fixed for each individual. Just what controls the extent of the stimulus for individual animals is not as yet known. Our present knowledge indicates that it is a problem of heredity as well as one of physiology. The chemical stimulus for milk secretion received at parturition is more or less independent of the plane of nutrition of the cow. Stated in another way, this stimulus neither requires a constant food supply from without the organism, nor is it increased by an excess food supply from outside the organism. Experimental evidence indicates that the chemical stimulus is so strong immediately following parturition that the milk flow will continue at a normal level for an astonishingly long period of time, at the expense of the body, with a food supply entirely inadequate for this purpose. It is not possible to increase the chemical stimulus for milk production immediately following parturition by means of an excess food supply.

As the lactation period advances, the chemical stimulus for milk secretion is gradually replaced by a stimulus with entirely different characteristics. Eckles and Palmer have designated this as the nervous stimulus. The nervous stimulus for milk secretion is entirely dependent on the plane of nutrition of the cow. Stated in other terms, this means that as soon as the nervous stimulus for the secretion of milk predominates, the milk flow is readily affected by a subnormal plane of nutrition, and can, moreover, be partially restored to its former figure by increasing the plane of nutrition. These researches presented by investigators in the field of agricultural sciences are not merely of interest because they bear on the production of food for man in the adult and particularly in the infant period. Lactation in the human species is not so readily subjected to accurate experimental observation; hence the knowledge of the possible factors which play a dominant part in the physiology of human milk secretion must be derived from other sources than observations on man. The conditions under which human lactating individuals ordinarily exist are, of course, widely different from those pertaining to the domestic animals; yet physiologic principles are often so fundamental in character that the environmental factors are incidental rather than essential, and broad principles are not necessarily vitiated by differences in species, locality, or habits of living.

2. Food Fat and Milk Fat, editorial, THE JOURNAL A. M. A., Jan. 27, 1917, p. 289.

3. Eckles, C. H., and Palmer, L. S.: The Influence of the Plane of Nutrition of the Cow upon the Composition and Properties of Milk and Butter Fat, Research Bull. 24, Univ. of Missouri Agr. Expt. Sta., 1916.

THE VENEREAL DISEASE PROBLEM—I

The sanitary problem of the venereal diseases is at present receiving wide consideration. In the countries which are at war, the importance of the subject is emphasized by the ravages which these diseases always produce among troops in war time, and by the anxiety concerning the great increase in prevalence of the venereal diseases which experience has shown follows the return of troops at the end of war. But another reason for the present interest in the subject is the opinion, which is evidently becoming widespread among those who are most conversant with the venereal diseases, that in early diagnosis and treatment lie effective measures for the control of these diseases, whenever governments may be persuaded to undertake a thoroughgoing attack against them. Among organized efforts which have recently been made against venereal diseases, those of England, Germany and Australia are outstanding. The efforts in England are, perhaps, of the greatest practical interest to us because England's social and political conditions approach most closely to ours.

The modern English attempts to attack the problems of prostitution and venereal disease may be briefly

reviewed, for particularly in their failures they offer instruction to us. These attempts may be said to go back to 1864. In that year the contagious disease act was passed, which provided for the regulation of prostitution and medical examination of prostitutes. Amendments to this act were passed in 1866 and 1869. The acts never had the support of the British public. They were abhorrent to the public sense of social decency, and were opposed on moral grounds by an influential part of the community. They were thus necessarily ineffective for the purposes for which they were passed. Opposition to them resulted in a royal commission in 1870 which recommended the abolition of the examination of prostitutes. In 1879 the House of Commons appointed a committee to consider the subject. This committee presented a divided report, a majority being against the repeal of the acts. In 1883 the agitation resulted in the abolition of the examination of prostitutes, and in 1886 the contagious disease acts were repealed. From 1886 to 1916 the English government has made no national effort to attack the situation.

In Great Britain, however, as elsewhere, there has been growing up a strong feeling that society must make an organized effort against the venereal diseases. In 1898 an insistent demand was made for the appointment of a royal commission to inquire into the prevalence and effects of the venereal diseases. In 1899 resolutions, proposed by the British Medical Association, calling for a full inquiry into this subject were passed by the Brussels International Medical Congress. Since that time there has been considerable agitation in England, but government authorities have showed reluctance to take up the problem, apparently feeling that the object which was desired was the reenactment of acts for the regulation and examination of prostitutes. All of these efforts were fruitless until 1913. In that year, shortly before the meeting of the international congress, public agitation on this subject was started in London by a small group of leaders, and a vigorous resolution on the subject was passed by the International Medical Congress at its meeting in London in 1913. These efforts succeeded in obtaining finally the appointment by the British Parliament, Nov. 1, 1913, of a royal commission[1] for the investigation of venereal diseases. This commission did not publish its report until March 2, 1916. It devoted more than two years to the investigation of the subject. It examined eighty-five expert witnesses, whom it asked 22,296 questions. It had as witnesses men who could speak authoritatively on the various topics under discussion, including well known continental authorities on venereal diseases. When it is added that the personnel of the commission represented the best British intelligence in its field, it may be seen that the findings of the committee are of great importance, and its report entitled to our most respectful consideration.

The commission apparently hesitated about making its report in war time, for fear that with more pressing business it might be overlooked. The importance of the subject, however, constrained the commission to make its report in the midst of the nation's preoccupation. As a matter of fact, the issuance of the report at this time proved to be particularly opportune. The importance of the venereal diseases was brought home to the country by the war in a way in which it could not have been done at any other time. This is shown by the fact that the essential, and most of the detailed, recommendations of the commission were carried into legal effect by action of the English Local Government Board, July 13, 1916—four months after the report was presented.

The report of the commission is restrained and temperate, and marked by sound appreciation of the practical difficulties of the problem. It shows not a suspicion of hysteria, but, on the contrary, is distinguished by the practical common sense which it has brought to bear on all of the aspects of the subject. The commission made no effort to consider prostitution alone, and it makes no suggestions as to the remedying of that social defect. It did, however, consider the question of registration and examination of prostitutes, and it sought the advice of continental medical authorities among others on this point.

The report can be briefly summarized. It holds that registration and medical examination of prostitutes are ineffective as a sanitary measure. It recommends against compulsory notification of venereal diseases at present. It urges the importance of education as to the seriousness of venereal diseases and the dangers of their transmission. It recommends the encouragement of well considered efforts for inculcating sexual restraint. It puts its great emphasis, however, on the therapeutic attack on syphilis, and by its recommendations indicates its opinion that in this lies the hope of the sanitary control of the plague. It is here that the report is definite and positive in its recommendations. In early and continuous treatment it finds the effective weapon against the venereal diseases, and in widespread state provisions for the diagnosis and treatment of the venereal diseases a practical way leading to a solution of the difficult problem which these diseases present.

1. The purpose of the commission was said to be: "To inquire into the prevalence of venereal diseases in the United Kingdom, their effects upon the health of the community, and the means by which those effects can be alleviated or prevented, it being understood that no return to the policy or provisions of the Contagious Diseases Acts of 1864, 1866, or 1869 is to be regarded as falling within the scope of the inquiry." The commission was formed as follows: Lord Sydenham of Combe, F.R.S. (chairman), noted for his public service; the Right Hon. Sir David Brynmor Jones, K.C., M.P., Sir Kenelm E. Digby and Sir Almeric FitzRoy, representing the legal and official side of the commission; Sir Malcolm Morris, F.R.C.S. Edin.; Mr. James Ernest Lane, F.R.C.S. Eng.; Sir John Collie, M.D.; Dr. Arthur Newsholme; Dr. F. W. Mott, F.R.S., and Mrs. Scharlieb, M.D., noted as medical workers in this field; Canon J. W. Horsley, the Rev. J. Scott Lidgett, D.D., Mr. Philip Snowden, M.P., and Mrs. Creighton, religious and service workers, and Mrs. Burgwin, experienced in the care of the feebleminded. The secretary of the commission is Mr. E. R. Forber, an official of the Local Government Board. The London Lancet notes that the only omission from the committee which calls for notice is the absence of any member able to give first hand advice on the conditions in the military and naval services.

The report thus offers no startling findings. It presents no new remedy. It has, however, considered with great thoroughness all of the practical aspects of the problem, weighed them with unprejudiced judgment, and with quiet courage made the radical recommendation that the English government shall provide universal opportunities for the diagnosis and treatment of the venereal diseases. It submits a detailed plan for carrying out its recommendations as regards providing opportunities for diagnosis and treatment. The various recommendations of the report cannot be considered in the brief space of one notice. They are so important and so interesting that we shall revert to them later.

THE BOAS-OPPLER BACILLUS

About twenty years ago, Boas and Oppler[1] described the frequent occurrence of a long bacillus in the gastric contents of persons with carcinoma of the stomach. This appearance of what has since been known as the Boas-Oppler bacillus was repeatedly verified. It was found that the micro-organism cannot thrive in the presence of a normal gastric reaction due to hydrochloric acid, and it seemed to require a marked stagnation of the stomach for suitable development. As decreased gastric secretion of hydrochloric acid and diminished motility of the stomach commonly exist in cases of cancer of this organ, suitable opportunities are afforded for the growth of the Boas-Oppler bacillus.

In the minds of many practitioners, the finding of this micro-organism in stomach contents has come to have an almost specific diagnostic significance. Without knowing anything of its real origin and its bacteriologic relationships, they have endowed it with a special pathognomonic importance which has never been entirely warranted and has lost much of its earlier significance in the light of present knowledge. Long ago it was pointed out not only that the Boas-Oppler bacillus may be found at times in normal stomachs, but, further, that it seemed to be related to the lactobacilli in general. Heinemann of Chicago, in particular, demonstrated that bacilli belonging to what is now familiar as the *B. bulgaricus* group of organisms may be found in samples of gastric juice from healthy as well as carcinomatous stomachs. The close relationship of the Boas-Oppler bacillus with the lactobacilli, to which so much prominence has been given of late in relation to sour milk therapy, if not its actual identity with them, must be accepted.

Bacilli of the *B. bulgaricus* group are widely distributed in nature. They have been found in fodders and foods serving for animal and human consumption, in soil, in feces, in saliva — to enumerate only a few of the sources. In a recent study of the lactobacilli, Heinemann and Ecker[2] remind us that since these micro-organisms have been found in saliva and feces under normal conditions, it would be surprising if they did not exist normally in the stomach. Their presence in the digestive tract is a natural result of their frequency in foods, especially milk and milk products. Furthermore, this group of bacilli is able to resist a relatively high degree of acidity, and to survive where other bacteria are largely destroyed. Consequently the hydrochloric acid of the stomach is not absolutely destructive to them, although it undoubtedly restrains their growth.

It seems logical to assume further, with Heinemann, that reduction in the amount of gastric acid or its absence will permit growth of bacilli of the bulgaricus type — an assumption which may readily explain the finding of any lactobacilli in large numbers in cases of gastric carcinoma. If this is true, they may be expected to be present in any pathologic condition which reduces the normal acidity of the gastric juice. Such is, in fact, the case. The presence of large numbers of the Boas-Oppler bacilli which gain access to the alimentary tract with the food is merely an indication of a reduction of the normal hydrochloric acid content, whether this is due to gastric ulcer, gastritis, pernicious anemia, or gastric carcinoma and possibly other pathologic conditions. Any specific diagnostic import beyond this is no longer tenable.

Recent investigations of the Boas-Oppler bacilli[2] make it probable that they are familiar lactic acid-producing organisms which occur in saliva and in the contents of the digestive tube. They are said to be common in the feces of bottle-fed infants, but relatively scarce in the alimentary contents of those which are breast fed. The typical lactobacilli have also been found in the decayed contents of teeth from which desiccated mucus has been removed, suggesting that the *Streptothrix buccalis*, long believed to be associated with dental caries, also may be closely related to the organisms here under discussion. All of these facts warn against attaching too much specific significance to the occasional finding of lactobacilli in the gastric contents.

1. Boas and Oppler: Zur Kenntniss des Mageninhalt beim Carcinoma ventriculi, Deutsch. med. Wchnschr., 1895, **21**, 73.
2. Heinemann, P. G., and Ecker, E. E.: A Study of the Boas-Oppler Bacillus, Jour. Bacteriol., 1916, **1**, 435.

Disease and the Chinese.—It is commonly said that diabetes is unknown in China, yet a recent incomplete investigation brought to light over 200 cases. Nervous diseases are accounted rare among the Chinese, yet even a short experience has shown their incidence, at least in Changsha, to be as great or greater than in this country. The idea of easy childbirth and freedom from puerperal and postpartum infection is contrary to much experience and certainly is not supported by the Chinese aphorism that a woman in labor has one foot in the grave. The group of neuroses, functional digestive disorders, gastric and duodenal ulcer, malignant, nutritional and constitutional diseases are without doubt vastly more prevalent in China than accredited to be. So we might go through the list. We must challenge every statement of a superior racial vitality in the Chinese on the ground of superior resistance to disease, until such time as demonstrable scientific proof and controlled statistics are presented in its favor.— Dr. Alfred C. Reed, *Scientific Monthly*, January, 1917.

Current Comment

EGGS AND THE HEN

Next to milk and cereals, eggs probably play the most prominent part in the special dietaries of the sick, because of the advantageous composition of eggs from the standpoint of their nutritive value. Not only do they contain representatives of a variety of types of foodstuffs, but they also are palatable and lend themselves to culinary manipulation so as to meet a great diversity of tastes. Even most vegetarians are willing to include eggs in their list of acceptable food products. These facts help to account for the cry which has arisen at the advancing price of eggs, the much debated cause of which we may discreetly pass over in silence. In view of the situation, it is not without interest, however, to learn what hens can do to meet the emergency. The fourth annual international egg laying contest conducted by the Storrs Agricultural Experiment Station of Connecticut included 1,000 birds which laid an average of 152 eggs per hen during the year. One enterprising hen laid sixty-four eggs in sixty-four days. Other good individual records, which are not intended to represent the acme of laying possibilities, showed a production of more than 250 eggs per year. As every one knows, the egg production is not uniform at all seasons of the year, the maximum occurring in the spring and summer months. Dietotherapy and institutional dietetics need to bear these facts in mind — or suffer the economic consequences.

PROVING "INTENT"

A brief item appears in this week's Propaganda department on the failure of the federal authorities successfully to maintain the criminal charge against Brinkler, the self-styled food expert, of using the mails to defraud. Few realize the tremendous difficulties that confront the prosecution in cases of this kind. The Office of the Solicitor of the Post-Office Department, under both past and present administrations, has done notable public service in putting out of business some of the most pernicious swindles perpetrated on the American people. Samuels, with his "eye drops" cure-all and Moses, the "Oxypathor" faker come to mind as cases in which the government successfully maintained criminal action against the individuals. Moses and Samuels are now in the federal penitentiary. The great stumbling block in the way of the federal officers is that requirement in the law which makes it necessary for the prosecution in such instances to prove not only that a fraud has been perpetrated, but also that the man engaged in the business knew that he was defrauding. In other words, the government has to prove "intent." To keep out of the penitentiary it is only necessary for quacks of the Brinkler type to show with some plausibility that they humbugged the public in good faith in a mistaken belief in their own panacea. When such an attitude can be maintained, a verdict of "not guilty" is a foregone conclusion. Under these conditions, the greater the ignorance of the individual prosecuted, the easier it is to convince the jury that the man really believes in his own magic, and the more difficult the problem of putting him where he will cease to be a menace to the public health. Of Brinkler's ignorance, his "literature" and other material are the most palpable evidence. This fact, rather than any failure on the part of the federal officials to prove the inherent falsity of Brinkler's claims, is probably responsible for his acquittal. It is a pity that there is not a more general recognition of the principle enounced by Goethe that "nothing is more dangerous than active ignorance."

NATIONAL LEPROSARIUM BILL PASSES SENATE

As noted in our news columns in this issue, the passage of the bill providing for a national hospital for lepers marks the successful completion of efforts that have been made for a number of years[1] to secure the establishment by Congress of a national institution in which may be gathered, for care and treatment, those unfortunate persons who may be infected with leprosy. The number in any one state is too small to justify the establishment of state institutions. The popular horror of leprosy and the absence of adequate provisions for the care of lepers have led in the past to extremely cruel and inhuman incidents which, it is hoped, will in the future be impossible. The removal of infected persons forming possible centers of infection will doubtless tend to check the spread of the disease, while rigid quarantine inspection will halt all immigrant lepers at our ports of entry. The passage of this bill is a distinct achievement for public health, and marks not only a growing disposition on the part of Congress to legislate constructively on public health questions, but also the constantly expanding importance and scope of the United States Public Health Service. To Senator Ransdell of Louisiana, chairman of the Senate Committee on Public Health and National Quarantine, and to Mr. Adamson of Georgia, chairman of the House Committee on Interstate and Foreign Commerce, is due a large share of the credit for the success of this measure.

"MUCKRAKING" IN MEDICINE

"One of the things that has made today a bolder, better time than what Mr. Ade calls the 'yappy seventies' is muckraking. Call it muckraking if you like, call it honest journalism if you choose—the power to call men and things by their real names has shot our fair and colder nation several inches closer to the far-famed millennium."

This from F. P. A.'s "Conning Tower" in the New York *Tribune!* As is usual when he philosophizes, Mr. Adams scores a bull's eye. While the paragraph quoted applies to lay rather than medical journalism, the thought expressed is applicable to both. The "muckraking" with which THE JOURNAL has been charged has, to paraphrase Mr. Adams' statement, made medicine today a bolder, better profession than it was in the "yappy seventies." And, extending the comparison still further, the power of organized medi-

1. A National Leprosarium, Current Comment, THE JOURNAL A. M. A., March 4, 1916, p. 746; Dec. 16, 1916, p. 1855, General News, Jan. 22, 1916, p. 287; May 13, 1916, p. 1560; June 10, 1916, p. 1685; Dec. 16, 1916, p. 1858.

cine to call men and things by their real names has brought our profession appreciably closer to the scientific millenium.

THE FATE OF PHENOLSULPHONEPHTHALEIN

The employment of the phenolsulphonephthalein test as an index of renal functional capacity is rapidly becoming generalized. No doubt one of the reasons for this is, as was recently pointed out in THE JOURNAL,[1] that it is the method which most readily lends itself to use in general medical practice. The interpretation of this test has hitherto been based on the supposition that the retention of more than from 20 to 40 per cent., that is, the appearance of less than from 60 to 80 per cent. in the urine within two hours after injection, is an indication of deficient functional activity. According to Kendall,[2] phenolsulphonephthalein may in certain experimental conditions be destroyed in the body, and therefore not appear in the urine, although the kidneys may be functioning normally. He is inclined to attribute this destruction to the reducing action of an enzyme (reducase). Whatever the mechanism involved, these observations are of importance. Should they be confirmed, it will be necessary to ascertain whether or not this phenomenon occurs clinically in the human being and, if so, in what class of cases and to what extent. We may ultimately be obliged to limit our interpretation of the results of this test to this: that an excretion of from 60 to 80 per cent.—that is, a positive result—within two hours after the injection of the phenolsulphonephthalein is evidence of satisfactory renal activity.

NOSTRUM ADVERTISING AND THE AGENCY LEVERAGE

The ramifications of the fraudulent "patent medicine" business are many. The acceptance of advertising from such concerns by small country newspapers is not always an indication of a low ethical standard of advertising, at least not wholly so. One of the developments of modern business is the advertising agency, to which many concerns, instead of attempting to handle their own contracts, turn over their advertising business. These agencies place the advertisements in such publications as their special knowledge and judgment suggest will bring the best returns to their clients. Large agencies, having the power of dispensing advertising largess, naturally possess no little influence with publishers. Supposing, then, that the manager of a large agency is financially interested in a fraudulent "patent medicine" business whose advertising he handles—and there are some such cases. Suppose, further, that he submits an advertisement of the nostrum in which he is interested to a country newspaper publisher who tries to keep his advertising pages clean. If this country publisher rejects the "patent medicine" copy, he puts himself in the position of offending a man who has the power to send to him, or withhold from him, much reputable advertising business during the course of the year. As one of the big advertisers of the country has said: "Naturally publishers—particularly the little fellows—hesitate to offend a concern which sends them so much business even though they hate to accept this particular kind of advertising." When next you feel like "jumping on" the publisher of your local paper because of some particularly flagrant nostrum advertisement, find out before you do so just how much economic pressure is being exerted, directly or indirectly, to make him accept such advertising.

1. Disturbances of the Kidney, Therapeutics, THE JOURNAL A. M. A., Dec. 2, 1916, p. 1673.
2. Kendall, E. C.: The Fate of Phenolsulphonephthalein When Injected into the Animal Organism, THE JOURNAL A. M. A., this issue, p. 343.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Typhus at Clovis.—Two persons with typhus fever have been discovered in a Mexican camp at Clovis and have been removed to the County Hospital for treatment. They recently came from Mexico to the camp in Clovis. The camp has been quarantined.

Medical Lectures.—The lectures of the thirty-fifth popular course given in Lane Hall, under the auspices of Stanford University Medical School, will be as follows:

February 9, "Poliomyelitis." Dr. William C. Hassler, Health Officer of San Francisco.

February 23, "The Importance of Proper Habits of Carriage as a Basis of Health." Illustrated. Dr. Harry L. Langnecker, Clinical Instructor in Orthopedic Surgery, Stanford Medical School.

DISTRICT OF COLUMBIA

Podiatry to Be Regulated in the District.—A bill for the regulation of the practice of "podiatry" in the District passed the Senate, January 25, and now goes to the House. In the bill "podiatry" or "chiropody" is defined as the surgical or medical treatment of all ailments of the human foot, except the correction of deformities requiring the use of the knife, amputation of foot or toes, or the use of an anesthetic other than local. The bill does not interfere with physicians in the discharge of their professional duties. The board of medical supervisors is charged with the duty of carrying the act into effect. A schedule of preliminary and technical education is laid down for new applicants, progressing gradually in requirement until 1920, when the applicant must have a four-year high school course or its equivalent and must be a graduate of a podiatry school acceptable to the board of medical supervisors.

ILLINOIS

Change Meeting Date.—The Illinois State Medical Society has changed the date of the annual meeting from May 15 to 17, to May 8 to 10.

Communicable Disease.—Three cases of spinal meningitis have developed at the Great Lakes Naval Training Station, with one death. The liberty privilege for recruits has been temporarily suspended and all the apprentice seamen are under observation.

Infirmary Given to State University.—Dr. Edmund J. James, president of the University of Illinois, announced, on January 25, that Hon. William B. McKinley, Champaign, congressman from the Nineteenth District, has given bonds and stocks valued at $120,000 to the university for the establishment of an infirmary for the use of the students and faculties of the institution.

Chicago

New Research Laboratory.—The Chicago Medical Society has asked the president of the county board for a pathologic and research laboratory building and a new morgue at Cook County Hospital, at a cost of $750,000.

Ambulance Corps to Be Formed.—An ambulance corps of the medical students of the University of Chicago is in

process of formation under the direction of Dr. H. Wernicke Gentles, in local charge of the work of the American Red Cross.

Bloodgood in Chicago.—Dr. Joseph C. Bloodgood, Baltimore, visited Chicago, January 26, as the guest of the Chicago Dental Society, and gave an address on "The Preexisting Lesions of Oral Cavity and Their Relation to Malignant Disease."

Farewell to Healy.—A farewell dinner was tendered by the Chicago Ethical Society to Dr. and Mrs. William Healy, January 30. Addresses were made by Dr. Healy, Prof. W. I. Thomas of the University of Chicago and Dean W. H. Wigmore of Northwestern University. Mr. Horace J. Bridges presided.——The Chicago Neurological Society has adopted resolutions expressing appreciation of Dr. Healy's work and regrets at his departure, and good wishes for him in his new field of labor.

MARYLAND

Hospitals Need Room.—At the annual meeting of the board of trustees, the board of managers and the staff of the Union Protestant Infirmary, January 26, plans for obtaining $325,000 for a new building were launched. A site has already been purchased.

Mental Hygienists Hold Meeting.—The Mental Hygiene Society of Maryland met in Baltimore, January 24. Dr. Adolf Meyer, Baltimore, director of the Phipps Psychiatric Clinic; Mr. Leaon Faulkner, superintendent of the Maryland School for Boys, and Mr. G. H. Reeves, assistant superintendent of schools, were on the program.

Hebrew Hospital Plans Annex.—At the annual meeting of the Hebrew Hospital, the Jewish Home for Consumptives, and the Hebrew Educational Alliance, Baltimore, plans were considered for a new structure to cost about $200,000. Dr. Harry Adler, Baltimore, was reelected president of the Hebrew Hospital and Dr. Jose L. Hirsh, Baltimore, president of the Educational Alliance.

MASSACHUSETTS

Cup Presented to Forsyth.—January 20, the Forsyth Dental Infirmary for Children, Boston, was opened for public inspection. Special cases were shown, clinics were held, lectures were given and a loving cup was presented to Mr. Thomas A. Forsyth.

Personal.—The summer home at Braggville of Dr. Alonzo J. Shadman, West Roxbury, Boston, was destroyed by fire, January 17, with a loss of $15,000.——Dr. Stanley H. Osborn, district health officer for Berkshire District, has been appointed state epidemiologist, to fill the vacancy caused by the resignation of Dr. Walter H. Brown.——Dr. Howard A. Streeter, Marblehead, has been appointed district health officer of Berkshire District.——Dr. Edward H. Trowbridge has been appointed chairman of the board of health of Worcester.

Harvard Medical Lectures.—The free public lectures to be given on Sunday afternoons at 4 o'clock during February, under the auspices of the Faculty of Medicine of Harvard University at the Medical School, Longwood Avenue, will be as follows:

February 4—Dr. J. L. Morse, "Feeding and Its Relation to the Infant's Development."
February 11—Dr. F. J. Cotton, "The Development of Employer's Liability Insurance in Accident and Sickness."
February 18—Dr. E. H. Place, "Does It Pay to Have the Contagious Diseases During Childhood?"
February 25—Dr. Percy G. Stiles, "Sleep."

MINNESOTA

Free Antitoxin.—The state board of health has made Hastings a free distributing station for diphtheria antitoxin, with a health officer in charge.

Poliomyelitis Deaths.—Dr. Henry M. Bracken, secretary and executive officer of the state board of health, reports that during 1916 there were 906 cases of infantile paralysis with 104 deaths. Of these patients, seventy-five were adults.

Free Lectures at University.—February 14, the lecture in the free course announced by the University of Minnesota to be given by the faculty will be on "Cancer in the Light of Modern Research," by Dr. Harold E. Robertson.——February 28, Prof. R. W. Thatcher will deliver a lecture on "Plant Life and the Chemist."

Hospital for Worthington.—Articles of incorporation have been filed by the Worthington Hospital with a capital stock of $60,000. The incorporators are Drs. Frank M. Manson, president; C. P. Donal, vice president, and Justin T. Smallwood, secretary-treasurer, and J. N. Gould. The building will be of steel and concrete and fireproof throughout.

MISSOURI

Dinner to Ambulance Company.—Jackson County Medical Society gave a dinner in honor of the members of Ambulance Company, No. 1, N. G. Mo., commanded by Capt. William Gist, which recently returned from the Mexican border.

Home for Jackson County Medical Society.—The Jackson County Medical Society has paid off all indebtedness on its property, Robert Gilham Road and Thirty-First Street, Kansas City, and expects to put up a permanent building on the site.

School of Hygiene Opened.—The Kansas City Board of Health has opened a school of hygiene and sanitation for employees. Attendance is obligatory at the weekly meetings to be held on Saturdays. The employees of other departments having duties auxiliary to the health department will be invited to attend.

Protection of Children.—The Children's Code Commission has introduced about thirty-five bills in the legislature covering the protection and care of destitute and neglected children, delinquent children, defective children, child workers, statewide medical inspection of schoolchildren, protection of the eyes of new-born children, and the establishment of county boards of welfare.

Personal.—Dr. Oliver C. Gebhart, St. Joseph, major commanding Field Hospital, No. 1, N. G. Mo., after six months' service on the Mexican border, was the guest of honor at a dinner given by the citizens of St. Joseph, January 8, to welcome the return of the organization.——Dr. George E. Muns, Montgomery City, has been appointed a member of the board of curators of the state university, succeeding Dr. John C. Parrish, Vandalia, term expired.

Irregulars Punished.—G. W. Sollars, a chiropractor of Joplin, is said to have been fined in the circuit court for practicing medicine without a license.——Dr. James Clement, a cancer "specialist" of Kansas City, who left Kansas City pending an appeal after having been sentenced to imprisonment for a year in the penitentiary and a fine of $500 for falsely advertising a cancer "cure," was apprehended in Idaho by the federal authorities and has been returned to Kansas City.

Division of Health Department.—Kansas City has divided its health department into a hospital and a relief division and a health and sanitation division. Each division will be directed by a superintendent, and both divisions will be under the charge of a health director who has not yet been named. Each superintendent will receive a salary of $2,400 and the health director $3,000. Under the hospital relief division will be bureaus for the General Hospital, the Negro Hospital, the Emergency Hospital, the Isolation Hospital, Sanatorium for Tuberculosis, the hospital at the municipal farm and the Girl's Detention Home. Under the division of health and sanitation will be the bureaus for sanitary food and dairys, school inspection, dental inspection, garbage and vital statistics. Dr. Thomas F. Miller will be superintendent of the first division and Dr. George P. Pipkin, superintendent of the second division.

St. Louis

Personal.—Dr. Jerome F. Potts sailed from New York, January 20, to join one of the Harvard units for six months' service in France.

Medical Unit Organized.—The St. Louis Unit of the American Physicians Expedition Committee has been organized for service in Germany and Austria. Dr. Walter C. G. Kirchner will be in charge and will have associated with him Drs. Benjamin W. N. Klippel, L. H. Bock and Allan A. Gilbert. Four nurses will accompany the party. They will sail from New York, February 7, on the *Frederik VIII* and will report to Ambassador Gerard at Berlin.

NEW YORK

Typhoid at Gowanda.—There is an outbreak of typhoid fever at the Gowanda State Hospital, where sixteen cases of the disease had been reported up to January 25.

Tissue Examinations for Diagnosis.—The department of health offers to examine tissue and make a microscopic diag-

nosis on specimens sent in by physicians. Reports are made by letter or telephone in from twenty-four to thirty-six hours.

Appropriation for State Hospitals.—The finance committee of the senate and assembly have agreed on a plan for state institutions covering a period of ten years and involving the expenditure of $20,000,000. This money will be used to build new hospitals for the insane and institutions for the feebleminded, as well as repairs for existing institutions.

Sargol Exploiters Found Guilty.—The case of the United States against Wylie B. Jones and H. E. Woodward, proprietors of "Sargol," came to an end, Jan. 30, 1917, after a trial lasting thirteen weeks. Sargol is a fraudulent nostrum sold as an alleged flesh builder and exploited from Binghamton. The trial took place in Auburn and was one of the most bitterly contested "patent medicine" cases in the annals of the federal court. The government's case was ably conducted by Assistant United States Attorney F. J. Cregg and the case was heard before the Hon. Judge George W. Ray. Jones and Woodward were found guilty as charged in the indictment.

After-Care of Poliomyelitis.—Acting Commissioner Linsly R. Williams of the state department of health issued a statement, January 27, showing that out of 2,887 poliomyelitis patients reported prior to Oct. 1, 1916, 1,891 had been examined by department surgeons up to January 20, and of the 996 patients otherwise not accounted for the great percentage are either entirely recovered or are under competent orthopedic care. Since October 17, seventy-two clinics have been held in the state, with an average attendance of twenty-seven. Instructions for after-care have been left with local physicians and parents, and trained nurses have been assigned to centers of infection to supervise this after-care. Braces or appliances have been supplied free if the parents were unable to meet the expense. The department is now undertaking a follow-up system of examinations.

New York City

State Civil Service Examinations.—Examinations for the state, county and village service will be held in various cities throughout the state, February 24, for women for infantile paralysis after-care. Applications must be filed in the office of the Civil Service Commission on or before Feb. 15, 1917.

Correction.—Regarding the item in THE JOURNAL, January 13, entitled "Bronx Doctors Raise Fees," information has been received that the Bronx County Medical Society has not taken up the consideration of a schedule of fees and that the reports which appeared in the daily papers as well as in the medical journals were erroneous.

Lectures on Feeblemindedness.—New York University announces a course of fifteen lectures on feeblemindedness, its causes, consequences to society and method of treatment. The course has been organized by Dr. Thomas W. Salmon. The first lecture was delivered, January 26, by Dr. Henry H. Goddard.

First Case of Smallpox in City this Winter.—The first case of smallpox in Greater New York this winter was reported, January 22. The victim is a colored man who came from Wilmington, N. C., January 4. In 1874 there were 1,462 cases of smallpox in the old city; in 1875 there were 3,397 cases; in 1885, 98 cases; in 1915 in the greater city there were 2 cases; in 1916, 7 cases.

NORTH CAROLINA

Antiproprietary Medicine Bill Passed.—A bill prohibiting the sale or advertising in the state of "patent" proprietary medicines, purporting to cure so-called incurable diseases, was passed, January 27, by the upper house of the general assembly.

New Hospitals.—At the recent session of the Western North Carolina Conference of the Methodist Episcopal Church, South, held in Gastonia, it was decided to erect in some city of western North Carolina a large general hospital, capitalized for $150,000.

OHIO

Health Survey of Piqua.—Surg. Carroll Fox, U. S. P. H. S., is making a health survey of Piqua.

Trachoma in Ohio.—The state department of health has sent a questionnaire to all ophthalmologists practicing in Ohio with a view to determining the foci of infection of trachoma.

New Officers.—Toledo Academy of Medicine: president, Harold J. Morgan; vice president, Dr. Charles Lukens; secretary, Dr. Chester W. Waggoner, and treasurer, Dr. William W. Alderdyce.

Pasteurization of Milk.—Pasteurization of milk in Elyria is being opposed by women on the ground that it increases the cost without any advantage. The local health board is standing firmly by the regulation.

Tablet to Dr. Conklin.—The Montgomery County Medical Society of Dayton has voted to erect a bronze tablet in the public library, in recognition of the faithful services rendered to the society by Dr. William J. Conklin.

Personal.—Dr. McKendrie C. Smith, Marblecliff, has been appointed a member of the state board of health, succeeding Dr. Angus MacIver, Marysville.——Dr. Charles S. Ames, Ada, was seriously injured by the overturning of his automobile, January 8.

Physical Supervision of Schoolchildren.—The Logan County Medical Society has appointed a committee of three to cooperate with the county superintendent of schools to provide physical supervision for rural schoolchildren. This work is already being carried on in Bellefontaine, the county seat, by physicians who have donated their services.

Public Health Exhibit at Bellefontaine.—The public health exhibit of the state board of health was last shown in Bellefontaine under the auspices of the local board of health. Evening lectures, school addresses and motion picture exhibits were features. A conference of Logan County health officials was addressed by Acting Secretary J. E. Bauman and Dr. John R. McDowell, Springfield, of the state board of health.

Conference of State and Municipal Health Officers.—January 18 and 19, the forty-third conference of municipal health officials with the state board of health was held in Columbus. The chairman, Dr. Henry T. Sutton, Zanesville, directed attention to the need for improvement in morbidity reports, the benefits to be derived from placing the Bureau of Vital Statistics in the state department of health, and the need of more public health nurses to prevent blindness in infants. Dr. Clarence D. Selby, health commissioner of Toledo, read a paper on "The Relation of Industry to the Health Department," emphasizing the need for legislation to prevent undue exploitation of labor at the expense of health, and the value of health insurance. Dr. Frank G. Boudreau, Columbus, of the state board of health dealt with the present status of milk supervision in the cities of Ohio, showing that in only thirty-six of the eighty cities are all dairies regularly inspected. The sanitary aspects of bathing beaches and swimming pools were discussed by W. H. Dittoe and L. H. Van Buskirk of the state board of health. Dr. Roscoe P. Albaugh, Columbus, read a paper on "Three Deaths and a Number of Prostrations Due to Industrial Housing Conditions." A round table on terminal fumigation was led by Dr. John H. Landis, health officer of Cincinnati. The sentiment appeared to be that fumigation should be replaced by concurrent disinfection. Nearly all cities of Ohio were represented.

Cincinnati

Personal.—Dr. John P. Beneke, who has been critically ill with pneumonia, is reported convalescent.——Dr. Louis Valerio is serving with the Italian Red Cross.——Dr. Wade W. Oliver, who recently returned from the Rockefeller Foundation trip to South America, was operated on for appendicitis, January 2, and is doing well.

PENNSYLVANIA

Health Conference.—A conference of physicians will be held, February 16, at the state capitol, Harrisburg, under the auspices of the Division of Industrial Hygiene and Engineering of the Department of Labor and Industry.

Charity Budget Increased.—The increased cost of living and the growing population have caused a material increase in the sum recommended by the State Board of Public Charities for appropriations for state, semistate and private institutions. Two years ago the total recommended was $12,142,673.48, while this year's board recommends $15,041,884.

Medical Society Against Free Practice.—A pledge from all new members against free treatment in or out of hospital dispensaries for patients able to pay will be exacted hereafter by the Philadelphia County Medical Society. Resolutions endorsed by the society are as follows:

That physicians who are now working without remuneration in hospital dispensaries, request the management of such to institute an

efficient system of investigation of the social and financial status of each patient admitted, and that each such patient be supplied with evidence of this investigation before presentation to the physician for second treatment.

Philadelphia

New Ambulances.—Two new ambulances are soon to be in service with the American Field Ambulance Corps at the French front as a result of donations received by the American Ambulance Hospital Committee of the Emergency Aid.

New Officers.—At the annual meeting of the Philadelphia County Medical Society, January 17, the following officers were elected: president, Dr. Henry D. Jump; vice president, Dr. Moses Behrend; associate vice presidents, Drs. Mitchell P. Warmuth, Andrew Callahan, Louis E. Barlow, Samuel McClary III, George E. Levis, Robert N. Downs, Jr., and Aaron Bray; secretary, Dr. William S. Ray, and treasurer, Dr. Edward A. Shumway.

Public Lecture Course for Women.—The lectures during February in the public lecture course given by the faculty of the Women's Medical College of Pennsylvania will be as follows:

February 7: "Principles of Nutrition," Dr. Martha Tracy.
February 14: "Food and Efficiency," Dr. Martha Tracy.
February 21: "Health Problems of Girls and Women," Dr. Ella B. Everitt.
February 28: "Social Diseases," Dr. Frances C. Van Gasken.

Personal.—William Curtis Farabee, curator of the American Section of the University of Pennsylvania Museum, who recently returned after three years of exploration in the Amazon Valley, was awarded the Elisha Kent Kane Medal by the Geographical Society of Philadelphia, January 19.——Dr. Frank C. Abbott, who recently returned after fourteen months on the western war front, delivered an address before the Ethical Culture Society, January 14, on "War Experiences in Europe." Dr. Abbott expects to return shortly.——Dr. Francis V. Gowen has returned after several months as head surgeon in a hospital at Bretigny-sur-Orge, France.

WASHINGTON

Hospital Fire.—Fire in St. Luke's Hospital, Spokane, January 21, caused damage estimated at $50,000.

Personal.—Dr. Edward A. Rich has been appointed health officer of Tacoma, and Dr. Jonathan E. Henry has been continued as city chemist and bacteriologist.

New Officers.—At the annual meeting of the Spokane County Medical Society, January 11, the following officers were elected: president, Dr. Herman P. Marshall; vice presidents, Drs. Peter Reid, Rufus I. Newell and Arthur E. Johnson; secretary, Dr. William Sullivan, and treasurer, Dr. Alexander R. Lundgren.

WEST VIRGINIA

Paralysis Epidemic Checked.—The epidemic of infantile paralysis at Elkins has apparently been checked. There have been seventeen cases reported, with two deaths.

Society Activities.—On February 2, the Ohio County Medical Society, Wheeling, held a joint meeting with the board of education of Wheeling, at which Dr. Edwin A. Peterson, in charge of the medical department inspection and physical education in Cleveland, delivered an address.

Epidemic of Disease.—Dr. Samuel L. Jepson, commissioner of health, has issued an order suspending the quarantine against the city of Elkins, where infantile paralysis has been prevalent.——On account of the presence of infantile paralysis in Fairmont, the Marion County Medical Association has recommended that all schools, except the State Normal School, be closed, and that children under 16 years of age be not allowed to attend public gatherings.

WISCONSIN

Personal.—Dr. Arthur S. Loevenhart of the University of Wisconsin has been under treatment in a hospital for an attack of nephritic colic.

Smallpox.—The Mammoth Paint Creek Construction Camp, where 500 men were employed, was suspended, January 19, owing to the outbreak of smallpox at Camp Wisota.

Milwaukee Physicians Elect New Officers.—At the annual meeting of the Milwaukee Medical Society, January 9, the following officers were elected: president, Dr. Daniel Hopkinson; vice presidents, Drs. George A. Carhart and Alfred L. Kastner; secretary, Dr. Oscar Lotz, and treasurer, Dr. Joseph P. McMahon.

Hospital Notes.—The state board of control has endorsed the Onalaska site for the proposed $50,000 La Crosse County Tuberculosis Sanatorium.——The Waukesha County Board has purchased, for $16,500, a site near Pewaukee for a tuberculosis sanatorium.——St. Francis' Hospital, La Crosse, at a cost of $90,000, has added to its building two new wings, three stories in height. The entire hospital has been remodeled.

CANADA

Provincial Supply of Antitoxin.—The Provincial Board of Health for Ontario will supply diphtheria and tetanus antitoxin, antimeningitis serum, smallpox vaccine and Pasteur preventive treatment for rabies, and mixed typhoid and paratyphoid vaccine free to the public all over the province. The aggregate cost for the year will be $40,000, or about one fourth of the cost under commercial conditions. All these products except typhoid vaccine are obtained from the University of Toronto.

Personal.—Surg.-Gen. Carleton Jones will shortly relinquish his position as director of the medical services for Canada and become inspector-general between Canada, Great Britain and France. He will be succeeded by Col. Gilbert Lafayette Foster, formerly assistant director of medical services in the Toronto Military District.——Dr. Walter W. White, ex-president of the New Brunswick Medical Society, was given a dinner by members of the profession in St. John, N. B., on his fifty-fourth birthday.——Dr. J. T. Boyd, superintendent of the Kingston (Ont.) General Hospital, has resigned owing to ill health.——In the new cabinet of the British Columbia government two doctors are included: Dr. James H. King, minister of public work, and Dr. John D. MacLean, Provincial Secretary and Minister of Education.

GENERAL

Warren Prize Awarded.—The Warren triennial prize for 1916, amounting to $500, has been awarded to D. Noel Paton, Glasgow, Scotland, for his essay entitled "The Parathyroids."

Sale of Anhalonium to be Regulated.—The Senate passed a bill, January 25, to amend the Harrison Narcotic Law to cover anhalonium, mescale or muscale buttons, and pellote. The bill now goes to the House for action.

Tri-State Association to Meet.—The nineteenth annual session of the Tri-State Medical Association of the Carolinas and Virginia will be held in Durham, N. C., February 21 and 22, under the presidency of Dr. J. Allison Hodges, Richmond, Va.

Industrial Hygiene Standards.—Surg. Joseph W. Schereschewsky, U. S. P. H. S., in charge of the field work for occupational diseases, has been making an investigation of the health conditions of steel workers in Pittsburgh to provide the government with information for minimum standards of industrial hygiene.

Reinstatement Sought.—The reinstatement of Dr. Bert R. Huntington as first lieutenant, M. C., U. S. Army, is sought through special legislation, the United States Senate having passed a bill for that purpose, January 25. Dr. Huntington was examined for promotion to a captaincy in 1914, but the board made an adverse report and he was therefore discharged from the army, March 24, 1914.

Prize Offered by Industrial Medical Association.—The American Association of Industrial Physicians and Surgeons offers a prize of $100 for the best thesis on any subject relating to industrial medicine and surgery by any undergraduate medical student of the United States. The thesis must not contain more than 5,000 words and must be in the hands of Dr. Harry E. Mock, 122 South Michigan Avenue, Chicago, secretary of the association, on or before May 1, 1917.

The American Journal of Syphilis.—A new quarterly publication, the *American Journal of Syphilis*, has just issued its first number. It is a pretentious journal of 260 pages, with an elaborate staff of editors and editorial collaborators, about 100 of them. The cover page bears an appropriate statement by Sir William Osler:

Know syphilis in all its manifestations and relations and all other things clinical will be added unto you.

Several of the articles are excellently illustrated, and a symposium of three papers is devoted to syphilis of the stomach. The social side of the subject is not neglected, as evidenced by an article by Dr. William Allen Pusey on the "Sanitary Attack Upon Syphilis," and one by Dr. Henry H. Hazen on "Teaching of Syphilis."

Bequests and Donations.—The following bequests and donations have recently been announced:

For the establishment of a home for convalescents at Brewster, N. Y., $75,000, by the will of Mrs. Arietta Crane Reed.

St. Peter's Hospital, Brooklyn, $5,000, by the will of Ellen McAree.

Columbia University, New York, for the endowment fund of the Sloane Hospital for Women, $75,000, from Mrs. William Douglas Sloane.

Associated Charities of Newburyport, Mass., the income from $50,000, and the Anna Jaques Hospital, Newburyport, the income from $100,000 for the support and maintenance of the antituberculosis department, by the will of Julia M. Mosly, Newburyport.

Misericordia Hospital, Philadelphia, a contingent bequest of more than $4,000 from the estate of Mary E. Grandle.

Personal.—Passed Assistant Surgeon John B. Kaufman, U. S. N., lately in charge of the hospital school of instruction at Newport News, Va., has been placed in charge of the hospital school to be established at Great Lakes, Ill.——Senior Surgeon Henry R. Carter, assistant surgeon general, U. S. P. H. S., and head of the Malaria Investigation Bureau, has gone to Colleton County, S. C., to study the malaria conditions in Broxton Township.——Sanitary Engineer William D. Wrightson, U. S. P. H. S., head of the mosquito campaign in Baltimore, has accepted a position as superintendent of the construction of the Capitol Filterage Plant, to be built in Lima, Peru, by the Peruvian government, and has sailed for his new post of duty.

Typhoid Death Claims Settled.—The Illinois Industrial Board has completed the settlement of fourteen of the eighteen death claims against the Elgin National Watch Company as a result of the recent typhoid epidemic among its employees. This epidemic, amounting to over 100 cases of typhoid, was due to the contamination of the drinking water furnished employees. The settlements made so far aggregate over $30,000, or an average of a little more than $2,000 each. The four remaining claims will probably be settled during the next month. In addition to the settlement of these death claims, the Elgin National Watch Company has voluntarily paid over $55,000 for medical and hospital attendance in an effort to control the typhoid epidemic. The case is an important one as tending to establish the principle that typhoid fever is, under some conditions, a disease consequent on occupation.

National Leprosarium Bill Passes Senate.—The bill providing for a national hospital for lepers has been discussed in THE JOURNAL repeatedly during the past year. This bill, simultaneously introduced in the House and Senate, passed the House, May 15, 1916. It appropriated $250,000 for a national home for lepers, either on a site acquired by purchase or on any abandoned government reservation suitable for the purpose, the hospital to be under the regulation of the surgeon-general of the U. S. Public Health Service and to be for the care and treatment of any person afflicted with leprosy who presents himself voluntarily, or for any who may be apprehended under the U. S. Quarantine Acts, or for any one consigned to the home by the proper health authorities of any state. January 25, the bill was called up on the calendar in the Senate. As passed by the House, the bill provided an addition to the pay of any medical officers detailed for service in the leper hospital of one half of their regular pay; in the Senate bill the additional pay was one quarter. Senator Ransdell of Louisiana, chairman of the Senate Committee on Public Health and National Quarantine, in order to expedite the passage of the bill, moved to substitute the House bill for the Senate bill and secured its passage by unanimous consent.

WAR NOTES

Praise for American Ambulance Men.—In an official comendation of the Second American Automobile Ambulance Section on duty in France, Robert MacCreary, East Aurora, N. Y., and Marcellus Wild, Rochester, N. Y., have been named "for their really exceptional devotion to duty." H. C. Hoskier and Marcel du Casse, New York, and L. H. Northrop, Winnipeg, Man., received individual mention, entitling them to the *Croix de Guerre*.

Contributions to Expeditions Committee Fund.—Hon. Herman A. Metz, Cleveland, has contributed $20,000 to the American Physicians Expeditions Committee.

Unit Sails for England.—The following physicians sailed, January 20, on the *New York* for service at hospitals in England and base hospitals in France: Drs. James V. Ricci, Providence, R. I.; Jerome F. Potts, Washington, D. C.; William M. Findley, New York; Frederick A. Simonds, Wakefield, Mass.; J. Franklin Harvey, Boston; Charles Curtis Allen, Topeka, Kan.; Leo Thomas Kewer, Waverley, Mass.; Carl Edwin Allison, Wakefield, Mass.; Charles F. Gormly, Providence, R. I.; William H. Mackay, Worcester, Mass., and Audley C. Sanders, Boston.

FOREIGN

Cholera and Typhus in Palestine.—The Women's Zionist Organization of New York announces that cholera and typhus have claimed so many victims among physicians in Palestine that few medical men remain on duty. The organization asks $75,000 for the equipment and maintenance of a medical unit for one year.

New Medical Era for China.—President Harry Pratt Judson of the University of Chicago, in an address before the World Problem Institute of the University of Chicago, January 8, stated that it is proposed that a medical training school be erected in Peking. Around this school a chain of hospitals will be established. A second school will be organized at Shanghai. Both of these institutions are to be financed by the Rockefeller Foundation.

Meetings of Internists in Europe.—The ninth quadrennial Scandinavian congress for internal medicine was to have been held in Finland this spring, but the war prevents. Arrangements have now been made for the meeting to be held at Copenhagen in August, 1917. The subjects appointed for discussion are "Importance of Dieting in Treatment of Insufficiency of the Heart and Kidneys," and "Neurasthenia in Relation to Psychopathic Conditions." V. Scheel, Bispebjaerg Hospital, Copenhagen, is the secretary.——The twenty-third annual meeting of the German internists is planned to convene at Wiesbaden in the coming April. The main addresses announced are on "Nutrition in War," "The Constitution as a Cause of Disease," and "The Rarer Infectious Diseases Encountered During the War." W. Weintraud, Rosselstrasse 20, Wiesbaden, is the secretary. The announcement of this meeting specifies that communications for it will not be accepted if their essential content has already been published.

Epidemic of Malignant Malaria in Mexico.—The *Bulletin* of the Mexican National Board of Health states that two health officers were sent to Tehuantepec, as yellow fever was said to be prevailing there, many dying from a sickness with much vomiting of blood and hemorrhagic stools. They found the trouble to be malignant malaria, the parasites of the tertian phase numerous in the blood. Isolation was practically impossible as about two thirds of the 10,752 inhabitants of the town were either sick or carriers, and practically all the special mosquitoes were infected. Brigades were formed to aid in fighting the malaria, pools were oiled and twenty-eight houses fumigated. The report covers the first sixteen days of the work; 426 sick were found and there were 180 deaths from the disease. The scarcity of quinin made it impossible to treat all the sick and there was none for preventive use. Efforts were promptly made to enlighten the public as to the epidemic and the necessity for proper treatment. In some of the cases the measures that had been previously applied were evidently responsible for some of the peculiar manifestations of the disease, no one thinking of giving quinin, as malaria had not been suspected.

The "Epidemics" Gold Medal for Landouzy of Paris.—The *médaille d'or des épidémics* has been awarded by the French government to Professor Landouzy for his long and ceaseless study of tuberculosis and means to combat it. He it was who first established the existence of tuberculosis in very young infants, which had been previously denied. His conception of "typhobacillosis" threw light on a hitherto unsuspected domain of the disease and enlarged the field of acute forms of the disease. It was he, also, who revealed the tuberculous nature of pleurisy *à frigore* which upset the traditions as to the necessity of the tubercle for the assumption of tuberculosis. He also inaugurated, in 1885, the new movement for social prophylaxis which developed from the old limited conception of "public health." In October, 1915, he took the lead in demanding and organizing measures for the detection and care of tuberculous soldiers. The state in awarding this medal to Landouzy aimed to emphasize in the eyes of the general public the epidemic character of tuberculosis, which, French writers say, inaugurates a new era. The 1913 statistics for France show a total of 18,552 deaths from all other epidemic diseases, outside of tuberculosis, and of 84,443 deaths from tuberculosis alone. During the cholera epidemics, as late as 1884, the death rate from this disease was 4.4 per ten thousand inhabitants; from typhoid in 1913 it was 0.9; from diphtheria, 0.63; while from tuberculosis, the death rate was 21.3: 10,000.

PARIS LETTER

PARIS, Jan. 4, 1917.

The War

SYPHILIS AFTER TWO YEARS OF WAR

At the session preceding the last one, held by the Académie de médecine, Dr. Gaucher, clinical professor of cutaneous diseases and syphilis of the Faculté de médecine de Paris, and Dr. Bizard made an interesting report on this subject. Whereas, before the war, there were, in round numbers, 300 cases of recently contracted syphilis among 3,000 patients treated at the St. Louis Hospital clinic (one in ten), during the first sixteen months of the war, 800 cases of syphilis were found among 5,000 patients (one in six); in the eight months following there were 600 syphilitics among 2,300 patients (one in four). Therefore, while during the first sixteen months of the war syphilis increased over 33 per cent. (almost 50 per cent), during the following eight months it increased over 50 per cent. (almost 67 per cent.). Commenting on this remarkable increase, Drs. Gaucher and Bizard insist that there were originally many unknown cases of syphilis. This fact, they believe, demonstrates the necessity of giving students more thorough instruction on syphilis. In fact, students should receive several months of special training in the study of this disease. Dr. Vaillard, general medical inspector of the military health service, has proposed that the authorities be invited to take the necessary measures to prevent the development of syphilis. Following this proposal, the Académie de médecine appointed a commission composed of Drs. Gaucher, Achard, Vaillard, Pinard and Kirmisson to draft a petition asking the government to enforce this resolution.

SMALLPOX VACCINATION BY ARMY PHYSICIANS

M. Justin Godart, undersecretary of state of the military health service, has recommended to the regional directors in the service that: (1) all soldiers be examined with the view of vaccinating or revaccinating all those who had escaped vaccination, (2) all employees in public or private manufactories operating for national defense be revaccinated with the least possible delay, and (3) the medical corps of the army be placed at the disposition of the civil authorities and charged to proceed with the legal revaccination of schoolchildren who have attained the age of 11 years.

FOR WAR CRIPPLES

At the suggestion of the Belgian government, cooperating with the French government, a conference of the allies is to be held at Paris, March 6, 1917, to consider the needs of those crippled in the war: their reeducation, employment, economic interests, protection, etc. The organizers of this movement appeal to all specialists, soliciting cooperation. The general secretary may be addressed at "rue de Bocage de Bleville, No. 1, Havre." The national office for the wounded at "quai d'Orsay, 97, Paris," will furnish all necessary information to those interested.

Are there Carriers of Tetanus Bacilli?

In a report to the Société de chirurgie de Paris, Dr. Colombino of Turin answers this question in the affirmative. In making a casual bacteriologic examination of infected wounds in patients who had been given an antitetanic serum injection and who had never even shown any symptoms of tetanus, he discovered not only the tetanus spores, as Berard and Lumière had already observed, but even the bacilli. Therefore, Colombino concludes that in the centers in which the wounded are treated, every patient, from the point of view of a tetanus infection, was a menace to his neighbor, and that, consequently, it was unsafe to operate in any manner on a patient whether infected with tetanus or not, without giving him a preventive, antitetanic serum injection. This opinion gave rise to an interesting discussion. Professor Legueu found Colombino's conclusion somewhat overdrawn. He believes that the antitetanic serum injection should be given only under certain conditions and in certain centers where tetanus occurs more frequently or where its occurrence is more to be feared. According to Dr. Pierre Delbet, clinical professor of surgery at the Faculté de médecine de Paris, the danger to which the carriers of tetanus bacilli subject the other patients is evidently not comparable with that of scarlet fever or diphtheria; but, nevertheless, this danger is real and similar to that which is caused by those who actually have tetanus. Dr. Broca, assistant professor at the Faculté de médecine de Paris, who, for two years, has operated daily on patients who had not been given preventive injections, has never had a single case of tetanus. Dr. Routier, on the other hand, for almost one year never performed even a minor operation without giving the patient on the eve, or at least on the morning of the day of operation, an antitetanic serum injection. He claims never to have had a case of operative tetanus. Dr. Tuffier, assistant professor at the Faculté de médecine de Paris, does not accept this practice, which he believes applies only when there is a case of tetanus in the service. Dr. Rochard is of the same opinion. Dr. Quénu believes that this is a question which needs to be studied further, because at present there are not enough facts to solve it.

Oculocardiac Reflex and Subjective Symptoms of Trephined Patients

Dr. Paul Sainton, physician at the hospitals of Paris, has drawn the attention of the Académie de médecine to the fact that in trephined patients there is a disturbance of the functional equilibrium which exists normally between the antagonistic, pneumogastric and sympathetic systems. Proof of this is the frequency of modifications of the oculocardiac reflexes which denote at times a hyperexcitability of the autonomous system and at others a hyperexcitability of the grand sympathetic system. They are comparable to those which have been described as existing in exophthalmic goiter. Testing the oculocardiac reflexes should therefore take its place among other procedures which make for the control of the subjective symptoms of the trephined.

Formation of a Franco-Russian Medical Committee

This committee has just been formed with a view of attracting to the schools of medicine and pharmacy of France the greatest possible number of Russian students and physicians; to send French students and physicians into Russia on scientific missions; to invite similar Russian missions to France, and to create Russian medical centers in the university cities of France to serve as medicocommercial centers. The honorary president of this medicochirurgical committee is Dr. Charles Richet, professor at the Faculté de médecine de Paris. The acting president is Professor Blanchard, and the general secretary is Dr. Roubinovitch, physician at the Hospice de Bicêtre.

Personal

At a recent meeting of the Académie de médecine, Prof. George Hayem was elected president for 1918.

Death of Dr. Edward Hirtz

Dr. Hirtz, physician at the hospitals of Paris and vice president of the Société de thérapeutique, recently succumbed to a cardiac affection. He had distinguished himself by his work on the circulatory system and its therapy.

BERLIN LETTER

BERLIN, Nov. 20, 1916.

Tuberculosis and the War

By resorting to proper hygienic and prophylactic measures in the fight against tuberculosis, the authorities have succeeded in reducing the number of cases of tuberculosis occurring in the army in times of peace. The most effective measure in this campaign has been the prompt isolation of every suspicious case. The incidence of tuberculosis in 1882 was 2.2 per thousand, whereas in 1910 it was only 1.3 per thousand. The same condition existed in the Austro-Hungarian army. Tuberculosis incidence was also greater in the Russian and English armies than in the armies of the central powers. Since the beginninng of the war it has manifestly been impossible to carry out the measures which resulted in this splendid showing in the German army. Persons with a predisposition to tuberculosis naturally could not be excluded from service. Furthermore, many of the volunteers withheld the information that they had had pulmonary disease, nor could these cases be detected by the medical examiners, who were compelled to make hurried examinations. The need for men made it necessary to accept for enlistment persons with healed or inactive tuberculosis, but many of these have made excellent soldiers, not only withstanding successfully the exacting demands of military service on their constitutional resistance, but even gaining in health and strength. The number of new cases of tuberculosis developing in the army is much smaller than was at first expected, notwithstanding the unusually severe conditions under which the soldiers live. The clinical picture of these cases does not differ from that of tuberculosis occurring during times of peace. As to the prognosis of these cases

of war or campaign tuberculosis, as they have been designated, there is some difference of opinion. Some observers report having seen severe, rapidly progressing cases, while others claim that many of these patients make a speedy recovery under appropriate hospital treatment.

TRAUMA AND TUBERCULOSIS

Much valuable information on the relationship of trauma to tuberculosis may be expected, although, according to present indications, few cases of tuberculosis have developed as the result of trauma in general and lung injuries in particular. The lighting up of old or latent cases and the progression of mild cases is not uncommon, however. In many instances old cases remained wholly unaffected. Moritz investigated cases of gunshot wounds of the chest at various special hospitals, and found a direct etiologic relationship between injury and tuberculosis in nine cases. In thirty-six cases the disease was undoubtedly made worse. These figures surely are not alarming when one remembers that the cases of lung injury in this war are numerous. During the Franco-Prussian war very few cases of pulmonary tuberculosis developed as the result of chest wounds. The typhoid prophylactic vaccination, it is believed, also activates pulmonary tuberculosis, although such cases are merely isolated instances. Observations made on this subject are very instructive. It is agreed that in a large percentage of cases the original diagnosis of tuberculosis was wrong. Fraenkel excluded an active tuberculosis in 60 per cent. of the cases, de la Camp in 30 per cent., Blümel of Halle in 80 per cent., and this in the face of the fact that the original diagnosis was made, not after a single examination, but after observations extending sometimes over months and carried on in an institution. The reason for these errors in diagnosis, Fraenkel believes, lies in the fact that too great value is placed on relatively insignificant findings. A laudable desire to recognize tuberculosis as early as possible has led many physicians to regard indefinite physical findings or an incomplete clinical history as a sufficient basis for a diagnosis of pulmonary tuberculosis. Fraenkel says that the diagnosis of pulmonary tuberculosis should be made only when the tubercle bacillus is unquestionably found in the sputum, or when a typical roentgenogram is obtained. He is convinced that the roentgenogram is never negative in a frank, open case of tuberculosis, or in any case of closed tuberculosis manifesting clinical symptoms. All other evidence Fraenkel regards as unsafe, stating that only an overwhelmingly large number of such signs and symptoms should serve as a basis for a positive diagnosis of tuberculosis. Goldscheider, de la Camp, Rieder, Scholz and others emphasize the absolute necessity of a Roentgen examination of the chest in arriving at a diagnosis of pulmonary tuberculosis. Of course, it is needless to state that a correct interpretation of the roentgenogram must be made. Goldscheider says that a shadow in the roentgenogram is not indicative of an active tuberculosis, nor does it justify exemption from military service or referring the individual to a hospital for treatment.

It is well to mention here something that occurred in Switzerland. The Swiss military insurance organization was confronted by the problem whether a case of tuberculosis making its appearance during military service was to be regarded as a disease incurred while in service, or as a disease having existed prior to enlistment. The majority of physicians today agree with the teaching of Behring and Römer that infection with the tubercle bacillus usually occurs during childhood, and that clinical manifestations do not appear until many years afterward in the form of metastasis, and that an exogenous infection of an adult is, in general, without significance. A commission of Swiss physicians came to the conclusion that pulmonary tuberculosis in these cases was not to be regarded as a disease of military service, but that it had existed previously. Not a single case could be found in which it was probable that the infection occurred after the age of 20. Therefore, the military insurance commission felt itself justified in refusing to give an indemnity to these tuberculosis soldiers although, for humanitarian reasons, it was willing to treat these men until recovery ensued. Stähelin was strongly opposed to these views. He referred to the frequent changes of opinion among physicians as to the exact nature of these cases, and believed that the commission had confused the terms "infection" and "illness." If it is true, he said, that over 90 per cent. of all persons become infected with the tubercle bacillus in their youth, whereas only relatively few manifest any symptoms of pulmonary disease, it is evident that while infection with the tubercle bacillus may have occurred, it was by no means the main etiologic factor of the subsequent illness. Grau agreed with Stähelin, and suggested that too firm a belief in the correctness of the teaching of Behring and Römer might prove to be a stumbling block in the effective campaign against tuberculosis.

DIAGNOSIS

Little has been added to means of diagnosis. Tachau and Mickel have investigated the matter of temperature elevation following exercises, and found that the variation in the well and the sick did not consist so much in the absolute increase of the temperature as in the rapidity of its fall. In the normal person the temperature falls to normal within half an hour, but not in the sick. The diagnostic value of this finding is strongly influenced by the fact that other diseases than tuberculosis show such pathologic reactions. The opinions as to the diagnostic value of the tuberculin tests are still varied. De la Camp's observation is of interest. He found that as the result of vaccinations the susceptibility to the tuberculin was altered so that the usual reaction failed to appear. Hochhaus found that Pirquet's reaction was negative in the case of many soldiers when one really would have expected a positive reaction.

The manysidedness of the clinical picture of pulmonary tuberculosis is laid to the various groupings made of these cases. The division made by Turban and Gerhardt is based on the progress of the tuberculous process. So far, however, as the course of the disease is concerned, the nature of the anatomic process is of greater importance than its spread. The Fraenkel-Albrecht classification is made on this basis. They recognize the cirrhotic, tubercular and pneumonic processes with combinations of cirrhotic-tubercular and tubercular-pneumonic cases. The cirrhotic and tubercular-cirrhotic cases are regarded as benignant because they result in scar formation; the other cases are looked on as being malignant because they are progressive. The clinical classification of individual types should be made only after every means of diagnosis has been resorted to, a careful review made of the clinical history, a thorough physical examination, a Roentgen examination, and after noting the course of the temperature and the fluctuations in body weight.

MILITARY FITNESS

It is impossible to lay down any rules that can be made to apply to military fitness. The individual case must be judged on its own merits, and in the end all such persons affected with tuberculosis must be regarded as fit for military service if they have sufficient physical endurance. Open cases of tuberculosis, or such as give evidence of an active process, must be exempt from military service. On the other hand, old, inactive cirrhotic forms can, under certain conditions, be regarded as fit for all kinds of military service. This decision will be justified when the individual concerned has withstood all sorts of service successfully, and when he is sent to the hospital, not because of his tuberculosis, but because of some other illness or as the result of wounds.

LONDON LETTER

LONDON, Jan. 6, 1917.

The War

MEDICAL SPECIMENS FROM THE WAR

In March, 1915, the war office constituted a committee to compile a medical history of the war, and the director-general of Army Medical Services became its president, and the secretary of the Medical Research Committee its secretary. The two scientific forces were united in one body. One of the objects of the committee was to collect from all the military hospitals specimens of interest and permanent value. These specimens are of great interest, and it was felt that at all costs they must be preserved. The collection was begun and the number of specimens received soon mounted up. As it was found impossible to carry out the original idea and store the specimens at the Royal Army Medical College, the council of the Royal College of Surgeons decided to place the workrooms and storerooms of the museum at the disposal of the Army Medical Service and to preserve, classify and register all specimens forwarded from military hospitals. The war office issued a memorandum telling army surgeons to forward specimens of an interesting and instructive type. In 1916 Major T. R. Elliott was placed in charge of the collection and transmission of these specimens from the pathologic laboratories attached to the base hospitals in France. The specimens at the end of 1916 numbered 1,100. They have been carefully stored under the direction of Prof. Arthur

Keith, curator of the College of Surgeons Museum. In this way a national collection has been built up. In order that it may be made of immediate use, it has been decided to place the specimens on exhibition, and the work of selection has been entrusted to Professor Shattock, pathologic curator of the Royal College of Surgeons. When the work of arrangement and correlation is completed, the medical profession, and thereby the people of this country, whether in the army or in civil life, will begin to enjoy the benefits of a singularly clearsighted policy.

The Campaign Against Venereal Diseases

The action of the government in providing centers for the free diagnosis and treatment of venereal diseases has been described in previous letters to THE JOURNAL. The subject continues to receive great attention in the press, and the grave consequences of these diseases are discussed with a freedom which would have seemed impossible a few years ago. The National Council for Combating Venereal Diseases has issued a report on its recent activities. It points out that on the publication of the Report of the Royal Commission on Venereal Diseases (described in a previous letter), the Council presented a memorial to the Local Government Board urging that financial support should immediately be given by the government to enable treatment centers to be established throughout the country. This request being granted, steps were then taken to focus public attention on the urgency of the problem by means of a series of conferences in several large towns. The most important one was that convened by the lord mayor of London, and at it certain fresh legislation was foreshadowed in the home secretary's speech. At his suggestion, recommendations were prepared by the national council and submitted to him for consideration. These recommendations included (1) the suppression of advertisements by quacks, and (2) making the transmission of venereal disease by a person who was aware that he was in an infectious condition a criminal offense. One of the earliest activities of the council consisted in undertaking, with the consent and approval of the war office, the provision of lectures to troops on the subject of venereal diseases. A syllabus was drawn up, and a panel of medical men formed who were willing and able to lecture. The lecture comprises a description of the diseases and their effects, the urgent need for thorough and early treatment, a statement of the dangers of quackery and concealment, and an explanation of the modes of infection and of the advantages of continence. During the last two years nearly a million men have been addressed on these lines. The lectures have been invariably well received, and many letters testifying to their utility have reached the council from officers in high command. This work is still in progress, and it has recently been extended, at the desire of the director-general of the army medical service, to include a lecture to each new class of cadets at all the officer cadet schools, so that every new officer may receive the information necessary to enable him to instruct the men under his command. The council has also assisted in furthering arrangements for providing facilities for early treatment for soldiers on leave in London, so that there should be no delay in commencing treatment owing to their temporary absence from their depots. The rules of all societies approved under the national insurance act include one depriving members of sickness benefit if their incapacity is the result of "misconduct." The result is that members suffering from venereal diseases are in many cases unable to obtain this benefit. The council came to the conclusion that this rule was likely to exert influence adverse to the campaign against these diseases, by discouraging such members from seeking early and efficient treatment. Representations to this effect were accordingly made to the principal societies, pointing out, in addition, that the abolition of the "misconduct rule" as regards venereal diseases would probably be of financial benefit to them in the long run, by relieving their funds from the strain of paying sickness and disablement benefit for the many cases of sickness and disablement arising from neglected venereal disease. As a result, resolutions giving effect to the principle have been passed by conferences representing the great majority of insured persons.

The national council is preparing to undertake a widespread propaganda. Arrangements have been made to hold special training classes for speakers. A certain number of men and women will be engaged for whole time services for the national council, and will work under the auspices of the county and town health officers in cordial cooperation with existing social agencies in various parts of the country. Arrangements have also been made to train local speakers and secure a panel of physicians who are willing to speak on the medical aspect of the question, and so supplement the teaching of social prevention given by the lay speakers. A number of conferences have already been arranged between municipal, medical and hospital authorities in many centers.

The most extreme development of the campaign is a proposal submitted to the home secretary by the Hammersmith borough council, which is nothing less than a by-law to enforce chastity. It may be necessary to explain that a by-law is a regulation made by a local authority for its own district, with the sanction of the government. The council suggests that a man who, knowing the injury he is likely to inflict on himself, his wife and children, and the community generally, consorts with prostitutes, deserves to be regarded as no less criminal than the keeper of a disorderly house; and if found in such company or on disorderly premises, he should be made liable to prosecution.

The Medical Service in the Somme Battle

The battle of the Somme, which lasted five months, is the greatest battle on record. The report on it by the commander of the British expeditionary force in France, Sir Douglas Haig, has just been published. Referring to the medical arrangements, he states that the losses entailed by the constant fighting throw a specially heavy strain on the medical services. This was met with the greatest zeal and efficiency. The gallantry and devotion with which officers and men of the regimental medical service and field ambulance discharged their duties is shown by the large number of the Royal Army Medical Corps and Medical Corps of the Dominions who have fallen in the field. The work of the medical services behind the front has been no less arduous. The untiring professional zeal and marked ability of the surgical specialists and consulting surgeons, combined with the skill and devotion of the medical and nursing staffs, both at the casualty clearing stations in the field and the stationary and general hospitals at the base, have been beyond praise. Immense help was rendered by the British Red Cross and the Army Medical Corps in their work. The health of the troops has been most satisfactory, and there was almost a complete absence of wastage due to disease of a preventable nature.

On the use of gas the dispatch contains the following paragraph:

> The employment by the enemy of gas and of liquid flame as weapons of offense compelled us not only to discover ways to protect our troops from their effects, but also to devise means to make use of the same instruments of destruction. Great fertility of invention has been shown, and very great credit is due to the special personnel employed for the rapidity and success with which these new arms have been developed and perfected, and for the very great devotion to duty they have displayed in a difficult and dangerous service. The army owes its thanks to the chemists, physiologists and physicians of the highest rank who devoted their energies to enabling us to surpass the enemy in the use of a means of warfare which took the civilized world by surprise.

Physicians to Charge Higher Fees

Since the war began, the price of everything has greatly increased, and therefore the cost of living is augmented. So far most physicians have not increased their charges. The Newcastle division of the British Medical Association, however, has decided to increase medical fees from 15 to 20 per cent., owing to the increased cost of living, drugs, etc.

Marriages

ISAAC NEWTON RATCHFORD, M.D., Stockton, Calif., to Miss Clarissa Merganten of San Francisco, December 30.

ARTHUR FRANCIS GROVE, M.D., to Miss Diana Augusta Uline, both of Dell Rapids, S. D., December 27.

FRANCIS DOWLING, M.D., Cincinnati, to Miss Margaret Phillips of Fort Thomas, Ky., January 19.

DEL MAR AKIN, M.D., Stratton Park, Colo., to Miss Helen Foster of Colorado Springs, December 7.

WALTER MAURICE LACEY, M.D., to Miss Marguerite Stall, both of Cheyenne, Wyo., December 27.

LOUIS MONROE TOMLINSON, M.D., Harveyville, Kan., to Miss Vinnie S. Grissinger, September 28.

JULIUS NAPOLEON HILL, M.D., to Miss Kathryn Bayliss, both of Murphy, N. C., January 4.

JULIUS E. LACKNER, M.D., Chicago, to Miss Florence Simon of Minneapolis, January 25.

Deaths

Leopold Frederick William Haas, M.D., New York; College of Physicians and Surgeons in the City of New York, 1898; aged 42; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; chief diagnostician of the Bronx Borough Board of Health; attending obstetrician to the Union Hospital, and attending physician to the Home of the Friendless; died in the Presbyterian Hospital, New York, January 18.

William Russell Allison, M.D., Peoria, Ill.; Rush Medical College, 1886; aged 53; a Fellow of the American Medical Association; for several years secretary and once president of the Peoria City Medical Society; for ten years health commissioner of Peoria and once alderman; for five years secretary of the Proctor Hospital Medical Staff, and at the time of his death president; died in his office, January 12, from angina pectoris.

Frederick Miller Corwin, M.D., Bayonne, N. J.; New York University, New York, 1881; aged 60; a Fellow of the American Medical Association; local surgeon of the Central Railroad of New Jersey; president of the medical board of the Bayonne Hospital and a member of the staff of the East Long Island Hospital; chief medical inspector of the board of education of Bayonne; died at his home, January 16, from heart disease.

Frederick W. Kiensle, M.D., Lynn, Ind.; Medical College of Indiana, Indianapolis, 1902; aged 39; formerly a member of the Indiana State Medical Association; died at the home of his mother in Greensfork, Ind., January 15, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Robert Henry Herkimer, M.D., Brooklyn; Long Island College Hospital, Brooklyn, 1892; aged 46; for twelve years chief medical inspector of the health department of Brooklyn; formerly a member of the Medical Society of the State of New York; died at his home, January 16, from pneumonia.

Charles L. Kissling, M.D., Milwaukee, Wis.; University of Munich, Bavaria, 1886; aged 57; a Fellow of the American Medical Association; a well known practitioner of Milwaukee, and for sixteen years a member of the board of education; died at his home, January 18, from heart disease.

Thomas R. Cave, M.D., Manhattan, Kan.; Medical College of Ohio, Cincinnati, 1874; aged 64; a Fellow of the American Medical Association; a member of the Golden Belt Medical Society; one of the most prominent practitioners of northeastern Kansas; died at his home, January 22.

John Wesley Chambers, M.D., Baltimore; College of Physicians and Surgeons, Baltimore, 1878; aged 64; a Fellow of the American Medical Association; professor of principles and practice of surgery and clinical surgery in his alma mater; died at DuBois, Pa., January 21.

William J. W. Kerr, M.D., Corsicana, Texas; University of Nashville, Tenn., 1870; aged 82; formerly a member of the State Medical Association of Texas; surgeon in the Confederate service throughout the Civil War; died at his home, November 12, from arteriosclerosis.

Ward Slosson Gregory, M.D., Colorado Springs, Colo.; College of Physicians and Surgeons in the City of New York, 1903; aged 37; a Fellow of the American Medical Association; formerly of Norwalk, Conn.; died at his home, January 14, from tuberculosis.

John C. Cullen, M.D., Anderson, Ind.; Medical College of Ohio, Cincinnati, 1868; aged 79; assistant surgeon of the Sixteenth Indiana Volunteer Infantry during the Civil War; a member of the city council of Anderson in 1884; died at his home, January 17.

Andrew Benjamin Knisley, M.D., Buffalo; University of the Victoria College, Coburg, Ont., 1885; aged 58; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; died at his home, January 10.

James Francis Ferry, M.D., Cambridge, Mass.; Harvard Medical School, 1887; was instantly killed, January 21, when the automobile in which he was riding was struck by a Boston and Maine freight train at a grade crossing at Still River station.

Irving Drury Chaney, M.D., Mount Airy, Md.; University of Maryland, Baltimore, 1906; aged 35; formerly a Fellow of the American Medical Association; a member of the Medical and Chirurgical Faculty of Maryland; died at Portland Manor, Md., January 18.

Clarence Henry Leland, M.D., Lowell, Mass.; Hahnemann Medical College, Philadelphia, 1873; aged 68; for many years a member of the staff of the Lowell General Hospital; died at his home, January 15, from pneumonia.

John Jay Crawford, M.D., Coraopolis, Pa.; Jefferson Medical College, 1882; Hahnemann Medical College, Chicago, 1884; aged 56; was almost instantly killed by the overturning of his automobile at McClarrens Mills, January 11.

Karl Rogers, M.D., Cleveland, Tenn.; University of Nashville, Tenn., 1907; aged 34; formerly a member of the Tennessee State Medical Association; died in a sanitarium in Cleveland, January 3, from acute nephritis.

George Sanson, M.D., Ashcroft, B. C.; University of the Victoria College, Coburg, Ont., 1886; aged 54; died at the Royal Victoria Hospital, Victoria, B. C., September 4, after an operation for carcinoma.

Anthony Keller, M.D., Falls City, Neb.; Jefferson Medical College, 1883; aged 65; formerly a Fellow of the American Medical Association; died at his home, January 10, from cerebral hemorrhage.

Roland Sumner Gove, M.D., Sanford, Me.; Bowdoin Medical School, Brunswick, Me., 1892; aged 46; a member of the Maine Medical Association; died at his home, December 18, from pneumonia.

Stephen Augustus Pedrick, M.D., Rowley, Mass.; Tufts College Medical School, Boston, 1895; aged 45; a member of the Massachusetts Medical Society; died at his home, December 28.

Charles Wesley Brown, M.D., Orland, Me.; Medical School of Maine, Brunswick, 1877; New York University, New York, 1888; aged 67; died at his home, January 8, from acute gastritis.

Eugene McIntyre Walker, M.D., Sylvester, Ga.; Medical College of Georgia, Augusta, 1914; aged 28; died at the home of his parents in Tifton, Ga., December 30, from typhoid fever.

John W. Snider, M.D., New Castle, Ohio; University of Wooster, Cleveland, 1878; aged 61; a member of the Ohio State Medical Association; died at his home, about January 6.

Townsend M. Luce, St. Louis (license, Missouri, 1887); aged 78; for more than half a century a practitioner of Missouri; a Confederate veteran; died at his home, January 12.

Allen A. Barnett, M.D., Jerseyville, Ill.; University of Louisville, Ky., 1853; aged 86; formerly a member of the Illinois State Medical Society; died at his home, January 12.

William Benjamin Yancey, M.D., Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1895; aged 49; died at his home, January 3, from pneumonia.

William Blackburn York, Chestnut Bluff, Tenn. (license, Tennessee, 1889); a practitioner since 1861; aged 76; a Confederate veteran; died at his home, January 3.

William A. Jones, M.D., Colfax, La.; Memphis (Tenn.) Hospital Medical College, 1888; aged 61; was found dead in his office, January 4, from heart disease.

Leonard W. Estabrook, M.D., Springport, Ind.; Rush Medical College, 1867; aged 82; a pioneer practitioner of Henry County; died at his home, January 8.

James N. Crabb, M.D., Chico, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; aged 65; died at his home, January 4, from heart disease.

James H. Kimball, M.D., Los Angeles; Hahnemann Medical College, Chicago, 1880; aged 72; a veteran of the Civil War; died at his home, January 3.

Thomas Morrison Burney, M.D., Los Angeles; University of Pennsylvania, Philadelphia, 1913; aged 26; died at his home, January 6, from tuberculosis.

Virgil Andrew Dial, M.D., Senath, Mo.; Vanderbilt University, Nashville, Tenn., 1915; aged 35; died at his home, January 7, from chronic nephritis.

James Thomas Rushin, M.D., Montgomery, Ala.; University of Tennessee, Nashville, 1883; aged 52; died in Montgomery, January 6.

William Ralph Fogarty, M.D., Brooklyn; Long Island College Hospital, 1912; aged 38; died at his home, January 5, from pneumonia.

William Skiddy Taylor, M.D., Pomona, N. Y.; Bellevue Hospital Medical College, 1881; died at his home, January 8.

Albert T. Webster, M.D., Carrollton, Ky.; Pulte Medical College, Cincinnati, 1899; aged 58; died at his home, recently.

Association News

THE NEW YORK SESSION

The Local Committee on Arrangements, Headquarters and Meeting Places

The local Committee on Arrangements for the 1917 session to be held in New York City, June 4-8, has been constituted with Dr. Wendell C. Phillips, chairman, Dr. Floyd M. Crandall, secretary, and Dr. Alexander Lambert, treasurer. The following chairmen of subcommittees have been named:

CHAIRMEN OF SUBCOMMITTEES

Finance	Dr. Alexander Lambert
Registration	Dr. Ramon Guiteras
Entertainment	Dr. John S. Thacher
Hotels	Dr. Reginald H. Sayre
Sections	Dr. Willy Meyer
Scientific Exhibit	Dr. Harlow Brooke
Commercial Exhibit	Dr. Henry S. Stearne
Press and Publicity	Dr. George D. Stewart
Golf	Dr. Charlton Wallace

LOCAL COMMITTEE HEADQUARTERS

This committee has established headquarters at the Academy of Medicine Building, 17 West Forty-Third Street. All communications to the local committee or any of its subcommittees should be mailed to that address.

GENERAL HEADQUARTERS

The Registration Bureau, the Scientific Exhibit and the Commercial Exhibit, together with the information bureau and the American Medical Association postoffice, will be housed in the Hotel Astor, which will be General Headquarters.

SECTION HEADQUARTERS

The section headquarters and meeting places are announced as follows:

Practice of Medicine	Biltmore, Supper Room
Surgery, General and Abdominal	Waldorf-Astoria, Grand Ball Room
Obstetrics, Gynecology and Abdominal Surgery	Waldorf-Astoria, Astor Gallery
Ophthalmology	Astor, North Ball Room
Laryngology, Otology and Rhinology	Astor, East Ball Room
Diseases of Children	McAlpin, Winter Garden
Pharmacology and Therapeutics	Manhattan
Pathology and Physiology	McAlpin, Blue Room
Stomatology	Astor, Yacht Room
Nervous and Mental Diseases	McAlpin, Roof Garden
Dermatology	Academy of Medicine, Du Bois Hall
Preventive Medicine and Public Health	Biltmore, Music Room
Genito-Urinary Diseases	Waldorf-Astoria, Green Room
Orthopedic Surgery	Waldorf-Astoria, Assembly Hall
Gastro-Enterology and Proctology	McAlpin, Green Room

HOUSE OF DELEGATES

The House of Delegates will meet in the Academy of Medicine Building, convening at 10 o'clock, Monday morning, June 5.

SCIENTIFIC ASSEMBLY

General Meeting.—The opening meeting of the Scientific Assembly will be held in the Grand Ball Room of the Waldorf-Astoria, convening at 8 o'clock, Tuesday evening, June 5, instead of at 10 a. m., as at previous sessions.

Section Meetings.—The section work will begin at 9 a. m. Wednesday, June 6, instead of at 2 o'clock Tuesday afternoon, as heretofore. The sections will hold two meetings, opening at 9 a. m. and at 2 p. m., Wednesday, Thursday and Friday, June 6, 7 and 8, respectively, or until the programs of the several sections are completed.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

GLYCEROPHOSPHATE COMP. AMPULS, 1 Cc., SQUIBB

Report of the Council on Pharmacy and Chemistry

"Glycerophosphate Comp. Ampuls, 1 Cc., Squibb" are claimed to contain, in each, sodium glycerophosphate 0.1 gm., strychnin cacodylate 0.0005 gm., and iron cacodylate 0.01 gm. The Council refused recognition to "Glycerophosphate Comp. Ampuls, 1 Cc., Squibb" because the name did not indicate the potent ingredients and because the administration of a mixture of sodium glycerophosphate, strychnin cacodylate and iron cacodylate is irrational.

The preceding statement was submitted to E. R. Squibb and Sons for consideration. The firm replied:

". . . we wish to explain that there has been a small demand for this product, no doubt created by other manufacturers. We have filled hitherto this demand as far as it came to us, using the formula regularly supplied for years by other firms.

"The name Glycerophosphate Comp. to cover a product containing sodium glycerophosphate, strychnine cacodylate and iron cacodylate, seemed to us to be the best that could be devised, under the circumstances. It is absolutely impossible to mention all the ingredients in the name, as it would give an unwieldy title. In passing, we might mention that the U. S. P. and N. F. cover also by the word 'Compound' the potent ingredients in many titles.

"However, the finding of the Council, that the formula here in question is irrational, must determine our action, and we have, in consequence, decided to eliminate Glycerophosphate Comp. Ampuls from our list, dropping the article altogether."

This cooperation in the work of the Council on Pharmacy and Chemistry is gratifying. In passing the Council notes that the foregoing criticism of many Pharmacopeial and National Formulary titles is justified. Many Pharmacopeial preparations have names which are not only nondescriptive but actually misleading. Such are compound powder of glycyrrhiza and compound syrup of figs, both of which owe their activity to senna, and acid camphor mixture and compound mixture of glycyrrhiza, which are essentially opium preparations. If any of these preparations possess therapeutic value their names should be descriptive, as otherwise they violate a fundamental principle in the nomenclature of medicinal substances, a principle for which the Council has contended and which is supported by both the medical and pharmaceutical professions as well as by manufacturers.

BRINKLER, "FOOD EXPERT," ACQUITTED

After a trial lasting three weeks, and after twenty hours' deliberation by a jury, George H. Brinkler, the self-styled "food expert," was acquitted on January 16, at Washington, D. C., of the criminal charge of using the mails to defraud. Brinkler was indicted on Aug. 7, 1914, and a fraud-order was issued against him by the postoffice department, Aug. 19, 1914. A full account of his methods was published in THE JOURNAL, Oct. 3, 1914, in this department and the matter has been reprinted in the pamphlet "Medical Mail-Order Frauds."

Witnesses for Brinkler included an exponent of the treatment of disease by the vacuum process, an advocate of mechanotherapeutics, and a "neuropath," and according to the Washington *Post* the attorney for the defense called "the leading dietetic experts of New York and Philadelphia to prove that the Brinkler theory is sound."

The unfortunate influence of this case on the public may be inferred from the impression sought to be conveyed by the Washington (D. C.) *Post*, which said:

"War to the last ditch is going on at the present time between doctors licensed by state boards to practice according to old conservative rules of materia medica, and the new practitioners who are more and more discarding drugs for what they contend is the natural methods of treating ailments, such as dieting, fasting, mental suggestion and the like.

There are many practitioners in every city, but it is stated, this was the first big case against any of them. . . .

"Court officials agreed that no more difficult proposition ever confronted a jury, and its finding is regarded as a big victory for the advocates of all natural methods of treating diseases."

The "victory," however, can hardly be called a decisive one, since it took the jury twenty hours to return the verdict "not guilty," even after the defendant's best efforts to prove his innocence. As a matter of fact the verdict is no evidence of the failure of the prosecution to prove the falsity of the defendant's therapeutic claims, for in order to sustain a conviction in such cases it is necessary for the prosecution to prove to the unanimous satisfaction of the jury not merely that the defendant's claims are false, but to prove also, beyond a reasonable doubt, that the defendant knew of their falsity at the time he made them. The verdict is to be accepted, therefore, as proving only that the prosecution did not succeed in convincing each one of the twelve jurors, beyond a reasonable doubt, that Brinkler's claims were false *and that Brinkler knew it*, and that with such knowledge he used the mails for the exploitation of such false claims for the purpose of obtaining money thereby.

Here in part is the *Tribune's* report[1] of the arrest of Upton, Andrews and Staples as it appeared in that paper, Nov. 9, 1913:

"Upton is charged with conspiracy with E. F. Andrews and L. H. Staples, both of whom reside in Omaha, to violate the postal laws by advertising the 'State Medical Institute,' which is the particular name given by the swindlers to their Omaha establishment.

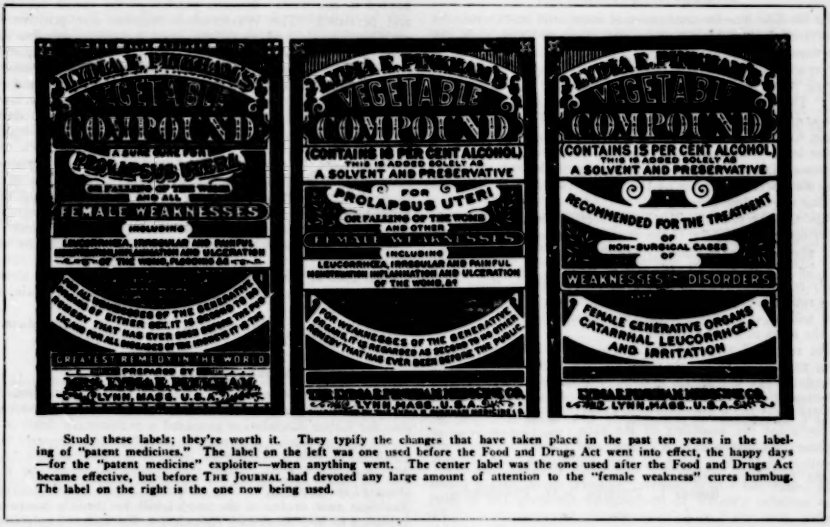
"The indictment charges Upton and his two alleged fellow conspirators with representing the institute to be one conducted by skilled specialists in men's diseases, when, 'whereas, in truth and in fact, the institute was not a reliable concern, but was conducted solely for the unlawful, fraudulent, and felonious purpose of inducing persons to part with their money and property to said conspirators, without giving anything of value in return therefor.'

"Upton was arrested in his office by Deputy Marshal Charles Schrimple on a warrant issued by United States Commissioner Lewis F. Mason. He was taken to the federal building and gave bond before the commissioner. The bond was fixed at $2,000, signed by Alphonse Russell and Charles H. Touzalin, president of the Touzalin Advertising Agency. Assistant District Attorney Peter P. Mindak represented the government in the proceedings. . . .

"The request for Upton's arrest came from District Attorney F. S. Howell of Omaha, who forwarded a certified copy of the indictment. The document recites the method of the alleged conspiracy and contains copies of numerous letters sent out to intended victims by the 'State Medical Institute.'

"The means of accomplishing the fraud, according to the indictment, was to send through the mails letters, circulars, and pamphlets and to advertise in the newspapers that the 'State Medical Institute' 'was an old established and reliable medical institute, conducted by a large staff of skilled specialists of recognized ability in the treatment of diseases of men, and whose experience, reputation and standing was such as to merit confidence.'

"The indictment continues that it was claimed: 'That it could and would cure men in all stages of nervous debility, vital weakness and loss of power. That the said letters, circulars, pamphlets and advertisements were so framed as par-


LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
A SURE CURE FOR
PROLAPSUS UTERI
OR FALLING OF THE WOMB
AND ALL
FEMALE WEAKNESSES
INCLUDING
LEUCORRHŒA, IRREGULAR AND PAINFUL
MENSTRUATION, INFLAMMATION AND ULCERATION
OF THE WOMB, FLOODING &c. &c.
FOR ALL WEAKNESSES OF THE GENERATIVE ORGANS OF EITHER SEX, IT IS EQUALLY TO BE RECOMMENDED AS A MEDICINE OF UNPARALLELED EFFICACY THAT HAS EVER BEEN BROUGHT BEFORE THE PUBLIC. IN FACT IT IS THE ONLY KNOWN REMEDY THAT IS FREE FROM ALL INJURIOUS DRUGS AND IS ABSOLUTELY HARMLESS IN ITS EFFECTS UPON THE MOST DELICATE ORGANISM. IT WILL CURE ENTIRELY ANY AND ALL DISEASES OF THE KIND IN THE LADIES FOR ALL DISEASES OF THE KIND IT IS THE
GREATEST REMEDY IN THE WORLD
PREPARED BY
LYDIA E. PINKHAM
LYNN, MASS. U.S.A.
LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
(CONTAINS 18 PER CENT ALCOHOL)
THIS IS ADDED SOLELY AS
A SOLVENT AND PRESERVATIVE
A SURE CURE FOR
PROLAPSUS UTERI
OR FALLING OF THE WOMB
AND OTHER
FEMALE WEAKNESSES
INCLUDING
LEUCORRHŒA, IRREGULAR AND PAINFUL
MENSTRUATION INFLAMMATION AND ULCERATION
OF THE WOMB, &c.
FOR WEAKNESSES OF THE GENERATIVE ORGANS, IT IS REGARDED AS SECOND TO NO OTHER REMEDY THAT HAS EVER BEEN BEFORE THE PUBLIC.
LYNN, MASS., U.S.A.
LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
(CONTAINS 18 PER CENT ALCOHOL)
THIS IS ADDED SOLELY AS
A SOLVENT AND PRESERVATIVE
RECOMMENDED FOR THE TREATMENT
OF
NON-SURGICAL CASES
OF
WEAKNESSES DISORDERS
FEMALE GENERATIVE ORGANS
CATARRHAL LEUCORRHŒA
AND IRRITATION
LYNN, MASS., U.S.A.

Study these labels; they're worth it. They typify the changes that have taken place in the past ten years in the labeling of "patent medicines." The label on the left was one used before the Food and Drugs Act went into effect, the happy days—for the "patent medicine" exploiter—when anything went. The center label was the one used after the Food and Drugs Act became effective, but before THE JOURNAL had devoted any large amount of attention to the "female weakness" cures humbug. The label on the right is the one now being used.

QUACKS ARE FINED

The State Medical Institute of Omaha Gets a Setback

On Jan. 24, 1917, W. T. Upton, E. F. Andrews and L. H. Staples pleaded guilty in the federal court at Omaha to conspiracy to use the United States mails for a scheme to defraud. Each was sentenced to pay a fine of $350; the fines were paid.

This trio was indicted, March 15, 1913, and the men were arrested in November, 1913, when the Chicago *Tribune* was turning the light on the "men's specialists" quacks of Chicago. One of the firms of medical charlatans to which the *Tribune* devoted a good deal of attention was "Dr. Howe & Co." W. T. Upton was, according to the *Tribune's* report, manager of the Howe concern and also of a string of similar institutions operated under aliases in different parts of the country.

1. The matter appears in full, with a large amount of additional information, in a pamphlet issued by the American Medical Association, "Men's Specialists," price 10 cents.

ticularly to attract the attention of and excite the fears and prey upon the minds of boys and young men and cause them to believe themselves to be afflicted with diseases of a private, insidious, and dangerous character, which if not at once arrested would result in permanent disability and loss of power, both physical and mental, when in fact they were in a normal and healthy condition and in need of no medical treatment whatever.'"

It thus appears that Upton, Andrews and Staples admit that the "State Medical Institute," which they operated in Omaha, was conducted solely for the unlawful, fraudulent and felonious purpose of separating the credulous sick from their money "without giving anything of value in return therefor."

Correspondence

The Differentiation of Spurious from True Anginal Pains by Two Tests

To the Editor:—In some cases of functional heart weakness associated with mild but perturbing chest and arm pain, the functional or neurotic character of the epiphenomena may be differentiated from that more grave in character by the following tests, both of which I have used and found to be of use: The pains in the chest and arms in neurotic angina disappear if the person suffering from them will thrust the little finger firmly into the external auditory meatus, particularly to the left. This no doubt stimulates the aural branch of the pneumogastric nerve, and, by increasing the heart's efficiency, thus dissipates the cause of the pain. This is true of pains coming on during exercise.

Again, if the patient will strongly retract the abdomen while suffering from his pain, if the cause is functional heart weakness associated with some hyperesthesia of his nervous system, he will be entirely relieved so long as the abdomen is firmly retracted. This is true more particularly in those who have rather protuberant and relaxed abdomens. Both of these tests will be of service not only in diagnosis but also in calming the fears of those afflicted.

The retracted abdomen method has some therapeutic features as well, since in the compression of the viscera, and secondarily, of the portal system of veins, the right auricle is better filled by the increased venous pressure in the cava, and the heart has a little less load to lift. This relief no doubt accounts for the annulling of the pain.

These two methods, it is hoped, will receive further confirmation as to their value by their application, and for this reason I mention them.

Robert L. Pitfield, M.D., Philadelphia.

Sodium Cacodylate in the Treatment of Syphilis

To the Editor:—I was much interested in the study of this subject by Dr. H. N. Cole (The Journal, Dec. 30, 1916, p. 2012).

In 1913 I treated a series of cases of syphilis with sodium cacodylate; but, not getting the desired results, I discontinued its use. In 1915, I became interested again because of the writings of Dr. J. B. Murphy, and applied it in three cases in which the patients had initial lesions:

Case 1.—J. M., man, aged 21, single, shoeworker, came to me with an initial lesion of the penis to the right of the frenum. I began intramuscular injections of sodium cacodylate, 5 grains, in ampuls made by Parke, Davis & Co., every day for ten days. Then I halted for ten days and repeated ten more injections. The sore on the penis entirely disappeared about the ninth day. There was a slight faintly macular eruption of the forearms and abdomen, which soon disappeared. There was no alopecia. When he returned, after the last series of ten injections, there were mucous patches in the throat and some involvement of the left tonsil. I put the patient on mixed treatment, which cleared his throat. He had at end of twenty doses of 5 grains of sodium cacodylate each a positive Wassermann reaction. After mercury and potassium iodid for two months there was a positive Wassermann reaction. To date after three salvarsan treatments intravenously there have been two negatives.

Case 2.—F. S., man, aged 28, married, machinist, had an initial lesion on the penis. Treatment with sixty injections of 5 grains of sodium cacodylate gave results as follows: The initial sore on the penis disappeared in ten injections; there were severe mucous patches of the mouth; the tonsils were badly infected. There was a positive Wassermann reaction. There were syphilids of both arms and shins; marked papular eruption; malaise, and a slight trace of albumin in the urine. I placed the patient on mercurials and at last gave him three salvarsan injections three weeks apart. The result was a negative Wassermann reaction, the skin was clear and the patient felt fine.

Case 3.—D. C., woman, aged 21, single, seamstress, had an initial lesion on the left side of the cervix, and a macular eruption on the face, neck and shoulders, and also, though faint, on the forearms. Thirty injections of sodium cacodylate of 5 grains each were given. The initial lesion disappeared in one week. Mucous patches of the mouth appeared and persisted. The Wassermann reaction was positive. I gave mercurials and potassium iodid for seven months, and salvarsan once. The Wassermann reaction is now negative.

My conclusion after two trials of the use of sodium cacodylate in small or large doses is that it has no effect toward curing the condition; in fact, the throat symptoms were seemingly increased in severity by its use. It has no effect on syphilids of the forearms and shins, and if anything makes them worse.

It improves the appetite, as one would expect. It has some effect on the kidneys, as noted in Case 2; it has some effect in healing the initial lesion, as noted in all three of this series; why, I do not know.

I am entirely satisfied that it has no beneficial effect on syphilitics and have discontinued its use entirely in my practice.

I am glad to have read Cole's excellent article, as it shows me that I was correct in my decision not to use it again, as it was worthless.

William G. Ward, M.D., Lynn, Mass.

Compulsory Health Insurance

To the Editor:—In an editorial in The Journal, Jan. 27, 1917, p. 292, appears the statement, "The American Association for Labor Legislation prepared a preliminary draft of a model bill on social insurance in which it has properly left blank the section providing for medical services, while asking the assistance of the medical profession to work out this phase of the problem." This statement is not strictly correct. The first two drafts of the model bill for health insurance prepared by the American Association for Labor Legislation left the medical sections in general form. In the supplement to the third and latest draft of the bill appear the sections providing for medical services drafted in accordance with the principles laid down in Dr. Lambert's article, which appeared in The Journal last week. Any readers of The Journal desiring copies of the complete bill can secure them from the American Association for Labor Legislation, 131 East Twenty-Third Street, New York City.

John B. Andrews, New York.
Secretary, American Association for Labor Legislation.

The Response of the Pyloric Mechanism

To the Editor:—In an editorial on W. E. Morse's experiments on the emptying of the stomach (The Journal, Jan. 13, 1917, p. 124), it is stated that the rapidity of discharge diminishes with the increase of acidity, and that this is "so contrary to the accepted version of what occurs" (here stands a reference to my "Mechanical Factors of Digestion"), that the problem is again presented for solution. In the volume referred to I have given evidence that various factors aside from acidity of the gastric contents affect the rate of gastric discharge. But I have pointed out that when these factors

are made uniform and the acidity is varied, the rate progressively diminishes with increase of acidity (see p. 120). The fact was established by Hedblom and myself over seven years ago. Quite naturally a variation of consistency from that of the food we employed, such as the use of water, for instance, in Morse's experiments, results in the effect of acidity being seen at different concentrations from those we observed—a condition which Morse clearly perceived and explained in his paper. That the rapidity of discharge of water diminishes with increase of acidity and that the rapidity of discharge of potato diminishes with increase of acidity are not such contradictory statements as your editorial implies.

W. B. CANNON, M.D.,
Harvard Medical School, Boston.

Blastomycosis of the Tongue

To the Editor:—The article on this subject by Dr. Gordon B. New (THE JOURNAL, Jan. 20, 1917, p. 186) to me is unconvincing.

Both Figure 3 and Figure 4 are not characteristic of the microscopic features of any known form of blastomycosis. They have more resemblance to lymphosarcoma or the Hodgkin group of tumors than to blastomycosis. Furthermore, I am not convinced that the mere presence of blastomycetes (if these are blastomycetes) can excite a lymphoid hyperplasia.

Figure 5, pure culture: blastomycetes, to my mind is a picture of a culture of common yeast fungi. In cultures of blastomycetes, one always finds mycelium.

The fact that the lesion healed under potassium iodid and radium is by no means proof that it is blastomycosis.

Perhaps Dr. New has better proof than he has published in this article. If so, it should be published, as those who are familiar with blastomycosis, in my opinion, will refuse to accept his conclusions.

RICHARD S. WEISS, M.D., St. Louis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SIMPLIFIED TECHNIC FOR LEUKOCYTE COUNT

To the Editor:—In THE JOURNAL, Feb. 9, 1910, p. 662, is a brief extract from *Hospitalstidende*, Dec. 1, 1909, p. 1353, under the title "Improved Technic for the Blood Count." It states that "the blood is transferred to a vial containing a bead and a fluid to dilute the blood, dissolve the red corpuscles and fix the whites." Nothing is mentioned about the amount of the blood and amount of fluid in the vial or test tube. Kindly give me an exact extract of the original article covering the points in question.

V. W. PLETH, M.D., Sonora, Calif.

ANSWER.—One large drop of blood (25 c.mm.) is drawn into a pipet and deposited in a vial or test tube already containing a small glass ball or bead and 19 drops of a fluid which dissolves the reds, fixes the whites and prevents shriveling as they dry. The test tube, plugged with a rubber stopper, can then be set aside until it is convenient to make the leukocyte count. As many test tubes can be used as desired, and the count can be made several times from each test tube, the average from a number of counts insuring greater accuracy. A capillary pipet marked for 25 c.mm. and for 10 c.mm. is used for the blood, and a larger pipet for the mixing fluid, marked off for the exact amount required, namely, nineteen times 25 c.mm.: $19 \times 25 = 475$ c.mm. A stand to hold a portable set of the test tubes is also convenient, as a number can be accumulated from the same or different cases and kept for a few days until a convenient moment arrives for the microscopic work, or the set can be sent to a laboratory. The mixing fluid found best adapted for the purpose consists of 45 c.c. of decinormal hydrochloric acid; 45 c.c. of a 0.9 per cent. solution of sodium chlorid, and 10 c.c. liquor formaldehydi. The count is made by taking up 10 c.mm. of the fluid in the test tube and spreading it over a circle, exactly 2 cm. in diameter, marked on an object glass. The specimen is then stained with a mixture of equal parts of a 1 per cent. aqueous solution of methylene blue and of a 0.2 per cent. solution of sodium hydroxid. The stain is left in contact for one minute and then rinsed off, leaving the object glass in water for from two to five minutes, then embedding in cedar oil. The number of leukocytes in 100 microscopic fields, multiplied by 50, gives the number of leukocytes per cubic millimeter. This formula is based on the ratio between the diameter of the microscopic field (0.4 mm.) and the area of the circle (100 sq.mm.). The article is illustrated, and directions are given for facilitating the count by means of dividing off the circle on the object glass into quarters, etc. The blood specimens can be used later for the differential count. Ellermann and Erlandsen worked with 100 microscopic fields for each specimen, and state that with a little practice the whole procedure takes amazingly little time. With 200 microscopic fields, they found that the error averaged only 3.4 per cent.

TREATMENT OF PSORIASIS

To the Editor:—Has there been anything new and effective developed in the treatment of psoriasis? Can you advise me if the vaccine treatment is producing any favorable results?

F. H. MOORE, M.D., Herkimer, N. Y.

ANSWER.—Various new methods have been proposed and tried more or less in the last few years, but none of them has proved of great value. In general, chrysarobin ointment still remains the most effective remedy for cleaning up psoriasis. The custom today is to use it in rather dilute strengths—from 2 to 5 per cent. chrysarobin in some ointment base. The lesions can often be cleaned up with Roentgen rays, but the method is not to be recommended unless used with great caution. As a rule, the eruption recurs after Roentgen-ray treatment, as after all other methods of treatment. Another recent method of treatment is exposure to highly actinic rays of light. Sometimes ordinary sunburning will clear up psoriasis, and exposure to ultraviolet light may do the same thing; but as a rule this method of treatment is disappointing. Autoserotherapy is the latest method suggested, but it has not yet been proved of value. The same can be said of the treatment of psoriasis with vaccines.

VIBERT'S SOLUTION FOR STAINING BLOOD CELLS

To the Editor:—Please give me the composition of Vibert's solution for the preservation of blood cells in their removal from blood stains. Mention is made of it in the *India Journal of Medical Research* (3, 214), in an article by W. D. Sutherland on "Examination of Blood Stains in Medico-Legal Cases."

HERBERT C. JAMIESON, M.D., Edmonton South, Canada.

ANSWER.—Francis S. Smith ("Forensic Examination of Blood Stains in the Tropics," *Bristol Med.-Chir. Jour.*, July, 1916, p. 84) gives the composition of Vibert's solution as a 0.5 per cent. mercuric chlorid solution in 2 per cent. sodium chlorid. He says:

MICROSCOPIC EXAMINATION.—A small quantity of scrapings from the stained area in the case of earth, knives and bamboos, or a portion of the fabric in the case of clothes, is taken and allowed to soak in a drop of Vibert's solution (0.5 per cent. $HgCl_2$ solution in 2 per cent. NaCl), or in a drop of glycerin solution (one part in seven of water). It is then covered with a cover glass, and after standing for half an hour is tested and examined under low power, high power and oil immersion lenses. Mammalian blood cells, and the oval, granular nuclei of nonmammalian corpuscles can be detected.

Typhoid Immunization.—The October number of the *Bulletin of the New York State Department of Health* is the "Typhoid Number." It is said that in view of the excellent results obtained from prophylactic immunization, it would be wise to immunize all the remaining members of a family in which a case of typhoid fever has occurred. A study of typhoid fever in certain sections of the state reveals that about one third of the patients received the infection by contact with an acute case, either in the same family or in the home of a neighbor. In view of this it would seem wise, except in well regulated hospitals or homes where there is an adequate water carriage system for the removal of excreta, to isolate the patient as rigidly as for a case of scarlet fever.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

CONNECTICUT: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. Mc Hall, 82 Grand Ave., New Haven.

CONNECTICUT: Eclectic: New Haven, March 6. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

ILLINOIS: Chicago, Feb. 21-23. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

IOWA: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

MAINE: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

VERMONT: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

TEACHING INTERNAL MEDICINE

Each Student a Teacher

STEWART R. ROBERTS, S.M. M.D.

Professor of Medicine and Clinical Medicine, Emory University, (Atlanta Medical College)

ATLANTA, GA.

Much is written of curriculums and hours allotted for different courses, and but little on methods of teaching. Even medical teachers and whole faculties seem to lack for words when it comes to didactic methods. In the selection of teachers and faculties much consideration is given to the training and research ability of a man, and but little to his real teaching ability, or his personal power to impart his training and knowledge. The old lecture is largely a thing of the past, yet certainly students need in their senior year some didactic touch in internal medicine apart from the bedside. The following twofold round table idea has been gradually developed in the Atlanta Medical College, and I have used it for two years with increasing evidence of its value. With small classes and in other departments the plan will probably be equally practical.

First, in the examination of patients in the hospital, a student is assigned to a patient to take the history, make the examination, do the laboratory work, and hand in a detailed report of his findings. Questions arise in the examination or in the laboratory work, and the student in charge of the case is assigned work on which he reports at the next meeting of the class. For example, one patient with pellagra has a dicrotic pulse, and the student who is studying the case is assigned, in addition to the ordinary study of the case, the dicrotic pulse—to explain its origin, its meaning, in what diseases it occurs, and to see if he can determine by palpation the difference between the dicrotic pulse, the pulsus alternans, and the bigeminal pulse. At the next meeting of the class or of the section, he summarizes his studies, or writes out the distinctions, and makes diagrammatic tracings of each pulse form.

Another student in examining a patient found a marked pyorrhea, stained a pus smear, and found the *Amoeba buccalis*. He was assigned the subject of "amebas in man," and he is now preparing a paper on that subject, and will summarize his findings on the board. This summary takes from two to five minutes to notice or read, but the student has looked up the literature, and has a fair idea of it when he reports.

Another student studying a case of lobar pneumonia was requested to give his section the next day in the ward a differential diagnosis between lobar and bronchopneumonia, and the following day he gave a differential diagnosis between acute bronchitis and bronchopneumonia. One student may call another in consultation on his case. The idea is to let the student studying pneumonia in the ward know not only his patient and the disease, but also teach, as far as he can, what he has learned to his fellows in the section. His teacher simply outlines, guides and corrects. The student is human, he realizes his powers, and his ability awakens his interest and energy.

Secondly, this teaching plan includes a systematic method of study of the literature, the preparation of papers, and an individual talk by the students to the class as a whole. In addition to the bedside work at the Grady Hospital, the seniors receive thirty hours from Professor Strickler on infectious diseases, and thirty hours from the writer on diseases of the heart, arteries, blood and kidneys, or one hour per week throughout the year. The present class numbers sixty-six men, and at the beginning of the year a subject is given to each man. A list of the men and subjects is posted in the library. The subjects follow, and it will be found that these cover the headings usually included in teaching diseases of the heart, arteries, blood and kidneys. Assignments are so made that at the close of the year, taken together, they form a systematic course, and subjects are presented to the class in the following order:

Conduction system
Position of the heart
Endocarditis
Myocarditis
Pericarditis
Senile heart
Heart poisons
Signs of heart failure
Passive congestion
Hypertrophy and dilatation
Congenital heart disease
Arteriosclerosis
Tachycardia and bradycardia
Blood pressure technic
High pressure
Aortitis
Embolism and thrombosis
Angina pectoris
Pulse character
Pathology of aneurysm
Symptoms and treatment of aneurysm
Sinus arrhythmia
Premature contractions
Auricular fibrillation
Auricular flutter
Paroxysmal tachycardia
Pulsus alternans
Heart block and Adams-Stokes disease
Heart in pneumonia
Heart in fevers
Cardiac asthma
Circulation in cirrhosis of the liver
Heart strain
Edema
Treatment of edema
Digitalis
Opium
Strophanthus
Nitrites
Nauheim baths
Nervous symptoms in heart disease
Secondary anemia
Pernicious anemia
Banti's disease
Leukemia
Movable kidney
Congestion of the kidney
Renal calculi
Casts
Albumin
Sugar
Nonprotein nitrogen
Ammonia
Urea
Uric acid
Diabetes: pathology
Acidosis
Treatment of diabetes
Pyelitis
Pyonephrosis
Functional tests
Acute nephritis
Tubular nephritis
Chronic vascular nephritis
Uremia
Influence of focal infection on heart and kidneys

The student is directed to write a paper on the subject assigned him, and references in books and current literature are given him outside the class and occasionally suggestions for subheads and outlines of theme. He is required to add a bibliography at the close, giving references and sources of information. When the time has come to discuss, for example, premature contractions, the student assigned that subject hands in his paper, walks to the front and addresses the class, summarizing his studies and paper. He has been told that he is the authority in the class for the year on that subject; in other words, he has a personal teaching responsibility to the class for his subject, and frequently he is so full of it that the difficulty consists in holding him down to the ten, twenty or thirty minutes which the importance of his subject justifies. There is not time enough to exhaust any subject, and the attempt is made to hold him strictly to the mountain peaks of importance in his talk. Frequently I throw out a question, or lead him back when he wanders afield or into too much detail. At other times and with less important subjects, he is permitted to summarize in the form of "conclusions" on the blackboard. In his paper, however, he must go thoroughly into the subject, discuss details and pathology, and fully cover the disease. At the close of his talk or summary, his fellow students may ask him questions and remind him, always courteously, of omissions. Often a student requests his paper back, that he may rewrite it because the discussion has brought out points omitted in the first draft. Each paper is corrected, and often handed back for revision or because the bibliography has been omitted, but rarely for failure to cover the subject thoroughly.

Questions arise which demand ready assistance from the authority in the class on that particular subject. For example, the student discussing the senile heart edges too far into the subject of myocarditis, and the student authority on myocarditis comes to his aid. A misstatement on the part of the student-lecturer brings an instant shaking of heads. The

attention is perfect. The hour is never long enough for students, subjects or teacher. After the papers are corrected, they are filed in the library and form the textbook for the class for the year. One student takes notes in shorthand, typewrites them, and sells the lot to each member of the class. The examination is based on these papers. If time and opportunity allow, the student is referred to hospital cases illustrating his subject, so that he gains material for his paper from books, current literature and the bedside. After a student has finished a subject, frequently a second subject is assigned to him.

It is true that but little time can be given to each subject, and the objection can rightfully be made that while each one is covered thoroughly on paper, it is covered only superficially before the class; but the paper is open in the library to the study and criticism of each man. The added individual interest and pride on the part of the student transforms what is called teaching into personal association. Students and teacher are together teachers and student, and their teacher is simply an older student, or in the beautiful word of the Japanese for teacher, *sensi*, one born before, or one who has experience.

ADVANTAGES OF THE METHOD

1. It teaches the student to consult many books and current literature, and to find illustrations at the bedside.

2. It teaches him to write a paper, and prepares him for activity in the hospital and the medical society.

3. It teaches him to talk before his fellows, and to think on his feet.

4. It teaches him the use of the library and the importance of current literature.

5. It teaches him to summarize, to give authority for his statements, and to base his conclusions on facts and not on opinions.

6. It arouses his interest, compels his attention, impresses his memory, and stimulates his reason.

Oklahoma July Report

Dr. Ralph V. Smith, secretary of the Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, July 11-12, 1916. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 32, of whom 29 passed, including 1 osteopath, 2 failed, and 1 was refused registration on account of immoral character. Fifteen candidates were licensed through reciprocity, including 2 osteopaths. Five candidates were granted reregistration licenses, including one nongraduate and one whose graduation could not be verified. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Birmingham Medical College	(1915)	83
Chicago College of Medicine and Surgery	(1916)	84
Loyola University	(1916)	82
University of Louisville	(1916)	81
Johns Hopkins University	(1915)	87
Washington University	(1916)	77
St. Louis University	(1916)	85
University of Oklahoma (1915) 82; (1916) 76, 78, 79, 82, 82, 83, 84, 86, 86, 87.		
Meharry Medical College	(1914) 70; (1915)	71
University of Tennessee (1915) 82; (1916) 78, 79, 80, 72.		
Baylor University	(1916)	79
Dallas School of Physicians and Surgeons*	(1911)	70
University of Virginia	(1916)	87
FAILED		
University of Oklahoma	(1916)	78 †
University of West Tennessee	(1909)	‡

* Information obtained indicates that no institution by this name was in existence in 1911.
†Fell below 50 per cent. in one branch.
‡ No grade given.

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of Arkansas	(1912,2)	(1915) Arkansas
Chicago College of Medicine and Surgery	(1912)	Arkansas
Rush Medical College	(1906)	Kansas
Eclectic Medical University	(1912)	Arkansas
Medical College of Ohio	(1901)	Nebraska
University of Pennsylvania	(1907)	Texas
Meharry Medical College	(1914)	Tennessee
University of the South	(1901)	Texas
Baylor University	(1905)	Texas
Fort Worth School of Medicine	(1914)	Texas
University of Vermont	(1904)	Vermont

Book Notices

BACTERIOLOGY, GENERAL, PATHOLOGICAL AND INTESTINAL. By Arthur Isaac Kendall, B.S., Ph.D., Dr.P.H., Professor of Bacteriology in the Northwestern University Medical School, Chicago. Cloth. Price, $4.50 net. Pp. 651, with 107 Illustrations. Philadelphia: Lea & Febiger, 1916.

This book covers ground that is dealt with in other texts on bacteriology, but as it reflects the experience and personal views of the author, it will prove a valuable addition to the library of the student of medicine. Dr. Kendall designates his book as covering general, pathologic and intestinal bacteriology, and while it is not clear why intestinal bacteriology should be so sharply differentiated from general and pathologic bacteriology as the title seems to imply, the summary of Dr. Kendall's own work on the intestinal flora will be generally welcomed; a little overemphasis is not likely to do harm. The text as a whole is clear and accurate and brought well up to date. The statement on page 488, with regard to botulism, that "hams, similar meats and meat products alone cause the disease," is not correct in itself, and is in some degree contradicted by a statement on page 486. In this section no mention is made of the important work done on botulism in California. A few misprints are noticed here and there, as on pages 35, 130, 358 and 607, but they are not for the most part very important. The use of "pleiomorphic" for "pleomorphic" seems to be more than a mere misprint, since it occurs throughout the book. The style is fairly clear and straightforward, although involved sentences like the following are somewhat too frequent: "Papasotirin and Prescott have isolated bacteria indistinguishable from *Bacillus coli* by cultural methods from hay and dried grains and the organism is very frequently present in flour, consequently the identification of it in milk does not furnish conclusive evidence of contamination either from human or bovine sources."

THE NEW METHOD IN DIABETES. The Practical Treatment of Diabetes as Conducted at the Battle Creek Sanitarium, Adapted to Home Use, Based Upon the Treatment of More than Eleven Hundred Cases. By J. H. Kellogg, M.D., LL.D., Chief Medical Director of the Battle Creek Sanitarium. Leather. Price, $2.50 net. Pp. 177. Battle Creek: Good Health Publishing Company, 1917.

In this book, Dr. Kellogg discusses the Allen treatment of diabetes with particular reference to the needs of the trained nurse and the intelligent patient, as well as of the physician. There is, of course, no question that the diabetic patient needs safe instruction. This is especially true when he is undergoing at home such a treatment as that outlined by Allen. The author considers first the fundamental questions of body physiology and pathologic chemistry in this disease. Under "New Method in Diabetes," he briefly points out the restrictions to which the diabetic must be prepared to limit himself. Under "Modern Methods of Examination," the author then takes up the diagnostic procedures involved in the determination of the severity of the patient's condition. He introduces here a chart known as the "Metabolism Graphic," a specimen of which is included with the book. The use of this chart permits the physician to have before him in graphic outline an analysis of the patient's condition. This analysis includes an estimation of such factors as the urinary sugar, the percentage of increase of blood sugar, the carbohydrate balance, the degree of acidosis, the energy balance, the water balance, the respiratory quotient, the food intake, the patient's weight, etc., and each of these points is discussed separately in the chapter mentioned. The discussion of feeding of diabetics includes a description of the inauguration of the fast, the method of feeding with estimation of calories and food values, and also a series of standard bills of fare. The author then takes up general health rules for the diabetic. These rules would—by the way—also be beneficial to those members of the family not afflicted with the disease. Other chapters concern complications of the disease, the care of a case in the home, directions for testing the urine, etc. The remainder of the book, about fifty pages, is devoted to recipes for the preparation of the special foods required by the diabetic.

Social Medicine, Medical Economics and Miscellany

A Rural School Survey

Public Health Service Bulletin 77 describes a survey of the rural schools of Porter County, Ind., conducted by three officers of the United States Public Health Service. The survey covered not only the physical and mental condition of the children, but also the schoolhouses, grounds, water supplies, toilet accommodations, etc. Porter County has an area of 415 square miles and a population of 21,250, 85.5 per cent. being native born. The school population is 3,933 and the total school enrolment 3,103. The average number of children in a family was 4.8, or 2.44 boys and 2.36 girls. Seventy-five rural schoolbuildings were surveyed, and medical examinations made of all the children. Of the buildings, thirty-three were frame, two cement and forty were brick, and sixty-seven were one story. In the seventy-five schoolbuildings there were 114 class rooms. Four rural schools obtain their water supply from town water systems, two are supplied by wells of from 125 to 130 feet deep, and thirteen or 17.3 per cent., are without wells. The remainder, nearly 75 per cent., are supplied from shallow driven wells. Sanitary drinking fountains were found in seven schools, but of these two were out of order and one was not in use. In all other cases, the children drink at the well. For toilet accommodations, there were four inside closets and seventy-one outside privies, none of which ranked higher than 50 in a possible 100. Sinks for washing were provided in three schools, while in fifty-six schools common wash basins were found. Paper towels were provided in eight schools, and individual towels provided by the parents were in use in three schools. Common towels were used in forty-one. The report contains summaries of findings on floor material, school desks, window shades, blackboards, illumination, ventilation and heating, temperature regulation, etc., all most interesting and of ultimate bearing on health conditions, but too lengthy for recital.

Part II of the report covers the physical condition of rural schoolchildren. As stated above, there is a total of 3,103 rural schoolchildren in Porter County. The average daily attendance in the rural school for the school years of 1914-1915 was 2,512. The physical survey included 2,488 schoolchildren, 1,253 boys and 1,235 girls. The age limit was from 6 to 16. Interesting data regarding height, weight, racial differences, vital capacity, chest expansion, cephalic index, pulse, respiration and nutrition were collected, but they are not capable of being generalized. Regarding defects and diseases, however, 2,228 disease conditions were found among the boys and 1,985 among the girls. Among 1,253 boys, there were 392 defects of hearing and 592 defects of vision, 749 boys had defective teeth, 166 had adenoids, 89 had enlarged tonsils and 25 had spinal curvature. Of the 1,235 girls, 348 had defects of hearing, 550 defective vision, 637 defective teeth, 122 had adenoids and 106 had enlarged tonsils. Defects of the heart were rare, only seven boys and three girls having any serious circulatory disturbance. Only two cases of tuberculosis were found, both of them being in girls. The large number of dental defects is easily accounted for by the fact that 18.3 per cent. of the boys and 10.5 per cent. of the girls had never used a toothbrush; 67.8 per cent. of the boys and 48.6 per cent. of the girls had used a toothbrush only occasionally, while with only 13.9 per cent. of the boys and 40.9 per cent. of the girls was the use of the toothbrush a daily habit. A study of the mental conditions of 1,087 girls and 1,098 boys made by the Binet-Simon tests show 193 children who were retarded and 21 who were especially retarded, making 214, or 9.3 per cent., of the children whose mental condition needed special attention and instruction. Mental defectiveness was found almost equally in the two sexes. A larger proportion of physical defects was found among the retarded children than among children whose mentality was normal. Twenty-one children, seven girls and fourteen boys, were feebleminded to a degree which rendered it improbable that they would ever develop beyond the mental status of a child. Three epileptics and two morally irresponsible children were found.

From the facts collected, the surgeons in charge of the survey concluded that there is an undue number of one room rural schools in the county, and an undue number of old buildings which have passed the limit of usefulness. The large number of children presenting physical defects is an evidence of the need of medical supervision, both for the sake of the child and for the protection of the community, while the number of mentally defective children found emphasizes the necessity of a mental classification of the children in order to separate those in need of institutional or individual treatment. A number of recommendations are made, among them being the consolidation of rural schools wherever possible, the remodeling of many others along sanitary lines, greater attention to daylight illumination, better provisions for sanitary toilet accommodations and for the protection of school water supplies, better heating and ventilating provisions, the combining of the duties of medical inspection of schools with those of the local health officer, and the securing of a full time health officer for the county.

Women in the Munition Factories

An investigation of working conditions and the home surroundings of women workers in one of the munition factories in New England was made by the Russell Sage Foundation under the supervision of Prof. Amy Hewes, of the Department of Economics, Mount Holyoke College, and former secretary of the Massachusetts Minimum Wage Commission. In the *Survey* (Jan. 6, 1917), Professor Hewes gives some of the findings of the investigation. Among 164 women, 146 of whom lived at home with their families, and eighteen in boarding houses or furnished rooms, the majority were born in the United States. Ten were from foreign countries. All were regarded as alert, ambitious and representative American working women. The majority were under the age of 24, and 80 per cent. were unmarried. In this munition town, which is at the center of the munitions business, Professor Hewes says three serious issues have arisen with reference to the women along with the high rate of wages. Women have been induced to work long hours at night; they work with or near explosives which sometimes mean accident, industrial poisoning or other illness; the high price of labor has been paralleled by the exceptionally high cost of living, which includes high rents, with almost inevitable overcrowding or other unfavorable living conditions. Night work is unpopular with most of the women, on account of the difficulty of getting sufficient sleep in the daytime, unsuitable time for recreation, and, in the case of married women, neglect of their houses and children, with consequent physical deterioration of the latter. On account of the tension, high speed and conditions surrounding the work, much the same conditions are developing here as among the munition workers in England. In September, 1915, an English committee, appointed under the ministry of munitions "to consider and advise on questions of industrial fatigue, hours of labor and other matters affecting the physical health and physical efficiency of workers in munition factories and workshops, went on record as opposing night work as being uneconomical because of higher wages and lower output; on account of the difficulty of arranging adequate lighting; because of the difficulty of securing sufficient sleep, and because of unwonted meal hours with consequent derangement of digestion. For profit alone, it is said, the manufacturers in the United States are producing munitions with feverish haste by methods which have been declared wasteful by the English investigators. The tendency is to lengthen the hours and to reduce wages, notwithstanding that the cost of necessities and rents is now out of proportion to even the high wages paid, as shown by a comparison with the wages in other New England industries in normal times. Connecticut, the state in question, it is said, has no law preventing all night work by women. They are allowed to work until 10 p. m., and the factories get around the law by having them rest from 10 to 12 and then

go to work again, the law saying nothing specifically about when they may go to work in the morning. Among the suggestions for bettering conditions among women workers, Professor Hewes offers the following: prohibition of night work; reduction of working hours from ten to eight, and for only six days in the week; a minimum time of one hour for luncheon (15 minutes being now allowed in some factories); education in accident prevention, with a compensation law providing higher compensation and a shorter waiting period; provision for clinical treatment of sufferers from industrial diseases, and compensation as in the case of industrial accidents.

Too Many Medical Papers

The scarcity of paper and its increased cost seem to be universal. The *Policlinico* of Rome, in commenting on the fact that many medical journals have suspended and that others have been reduced in size, regards the condition as not an unmixed evil. "The most tangible result," it says, "is that the amount of material published is sensibly reduced. This is not a serious evil, as too much has been and is still being published. It is not a bad thing for literary production to be restrained, condensed, reducing particulars to inclusive wholes. . . . It is certain that the larger proportion of medical journals contain too much that is trite, deplorably banal. They accumulate too many useless data, which might be suppressed to great advantage. Many articles have not the slightest reason for existing, and they merely cumber medical literature. . . . Graphomaniacs [this is not a bad word; it would not be out of place if applied to some medical men in this country] abound among physicians; some are graphomaniacs from temperament, others from policy." Presumably the *Policlinico* means here that it is an elegant and ethical form of self-advertising. Farther on: "Regardless of the superficiality of certain arguments, they dilate on them and dilute their personal observations with a flood of already known facts and opinions. . . . Their writings contain very little that is new, and what is new and interesting is padded out and strung along *ad nauseam*. . . . The same work appears first in some first-class journal and then, under other titles and with slight changes, it appears in minor periodicals and it fills up space and wastes time in medical bibliography. . . . We refrain from further descriptions for fear that they might have a too personal tinge. We all know that the incontinence [a good word in the original—it is *incontinenza*] of these authors might be checked and corrected." The *Policlinico* then begs writers to spare the editorial staff the waste of time and energy required to pass judgment on unworthy articles, "not to mention the disagreeable task of rejecting such manuscripts, and the load of responsibility it places on the editorial staff." The writer concludes with this advice, which we respectfully pass on: "Abstain from recording the commonplace, and let those who have something really interesting to report suppress useless details, long historical introductions, and rehashing of textbooks."

Health Administration.—The results of the health survey of St. Paul, made by Surg. George B. Young, U. S. P. H. S., appear in *Public Health Reports*, January 12. This study is similar to those made by the service in other cities. Dr. Young finds that the situation from a legal standpoint is uncertain. Old ordinances contradict each other or are not in accordance with the charter, while some public health activities are untouched. Some of the provisions of the charter are contradictory and some of the ordinances have been automatically repealed as being in conflict with the charter. The general sanitary status of the city was found to be good; the fundamental elements of a healthful community—a healthful site, a good water supply, a prosperous population derived from strong stock and unweakened as yet by generally congested housing and insanitary industrial conditions—are all present. The death rate for the city per thousand of population was never higher during any year from 1906 to and including 1915 than 11.4, and more than half of those years it has been below 11.

Medicolegal

Using Mails for Fraudulent Scheme of Alleged Divine Healing

(United States vs. Schlatter et al. (U. S.), 235 Fed. R. 381)

The United States District Court, in California, overrules a demurrer to an indictment charging the defendants with the crime of conspiracy to violate Section 215 of the federal penal code. Briefly, the scheme devised and contrived by the defendants, as alleged in the indictment, was that they would induce any and all persons whom they could induce to communicate with them to believe that they could and would cure almost all manner of known diseases by and through the medium of divine power. Specifically, for instance, it was alleged that the defendants conspired to represent to credulous ones, with whom they could get into communication, that they could and would bless a handkerchief, and that, if a person afflicted would apply such handkerchief to the afflicted portion of his or her body, he or she would thereby become cured. This, of course, was to be quid pro quo or consideration; not necessarily certain or definite in amount, but such a sum as the one seeking a cure felt justified in contributing. Substantially, the charge against the defendants was that, with the knowledge that they could accomplish no cures, and with the deliberate intention to defraud, they conspired together to contrive and consummate a scheme wherein and whereby, through the medium of alleged divine healing, they would obtain and convert to their own enrichment the money and property of such persons as might be sufficiently gullible as to be attracted by their specious and alluring promises of relief, all the while intending that such persons should receive no return for their money and property, save that comprehended in a dismal and costly experience. As a part and parcel of the scheme, and in furtherance thereof, it was alleged that they intended to, and actually did, make use of the mails of the United States. The court says that, in its judgment, this stated a complete offense, and, if the proofs be made in adequate support of the allegations in the indictment, there was no doubt but that the defendants should suffer punishment therefor. The point made in the brief of the demurring defendant's counsel apparently was that the defendant was and professed to be nothing more than a divine healer, and that divine healing has been practiced since the time of Christ, and in some form or other is practiced now by many reputable and widely recognized individuals and cults. That mental healing, or even divine healing, per se or in and of itself, is, under the laws of the land, as lawful as healing with drugs or by massage, or other mediums is true. But it is not true, never has been true, and never will be true that fraud can be glossed over or rendered reputable in the eyes of the community merely because it is associated with, or a feature of, some undertaking otherwise lawful in its nature and innocuous in its effect. In other words, the mere fact that a fraudulent scheme centers about divine or other healing does not in any wise or sense serve to take it out of the domain of a fraudulent scheme, and if, in furtherance of such a scheme conceived in fraud, the mails of the United States are made use of, without doubt, by whomsoever conceived or consummated, the perpetrators of such schemes should receive prompt and merited condemnation and punishment. It was therefore no answer to the crime charged in this indictment to assert that the defendants were engaged in the praiseworthy vocation of divine healing. That in no wise answered the charge that, with a knowledge that they were rendering no service at all to their "patients," and with the deliberate intention on their part to defraud their patients, they were using the mails of the United States in aid of their scheme to separate their patients from their money. The whole question, without doubt, revolved around the proposition as to the good faith of the defendants. If they were acting in good faith in their promise to bring the bloom of health back to the cheek of him who might make use of one of their blessed handkerchiefs, then, no matter how visionary their view may have

been, no matter how ill founded their conclusions may have been, no matter how much sheer incompetence in the exercise of judgment may have been their portion, they were not liable to prosecution as for the perpetration of a fraud on those who became their dupes. The simple query in the case was: Were they actuated by good faith? The indictment said they were not, but were moved by an intent to defraud. In the face of that they could not claim that no crime was charged against them.

Admissible Evidence of Criminal Abortion

(State vs. Newell (Minn.), 159 N. W. R. 829)

The Supreme Court of Minnesota, in affirming a conviction of the defendant of manslaughter in the first degree in the commission of an abortion on a young married woman, says that the woman went to the home of the defendant with the avowed purpose, if the testimony of her husband and her mother was credited, of procuring an abortion. There was evidence that there was an abortion. The evidence that the defendant caused it was largely circumstantial, but it rather clearly pointed to her guilt. The question was for the jury, and the evidence very amply supported the finding of guilty. Declarations made by the woman while under treatment, and before the abortion, as to the treatment given by the defendant, were competent evidence. Nor was there error in receiving on behalf of the state the testimony of another woman who stated that shortly before the date of the crime charged she went to the defendant for the purpose of having an abortion performed and that the defendant consented to perform it, though it was not performed. It was urged that the admission of this evidence, and other of like character, was error. The authorities approve such testimony. It is received for the purpose of showing a guilty or criminal intent in doing the act alleged to be criminal. It is not received in proof of the doing of the act or for the purpose of making it more likely in the minds of the jurors that the accused committed the crime charged. The proper application of this rule does not infringe on the general rule that it cannot be shown that the accused has committed other crimes. But the court on request should clearly limit the scope of the evidence.

Basis for Injured Person to Recover for Medical Treatment and Medicine

(Tarrant County Traction Co. vs. Bradshaw (Tex.), 185 S. W. R. 951)

The Court of Civil Appeals of Texas says that one of the physicians who attended Plaintiff Bradshaw and treated him for his injuries attributed to the negligence of the defendant company testified that the reasonable charges for the treatment and medicine which he gave him, if a man was able to pay it, would be $25. The Court thinks this was sufficient to sustain a recovery as to the medical services and medicine. The Court says that it does not think the inclusion of the clause, "if a man was able to pay it," would destroy or necessarily limit the force of the testimony to the effect that the reasonable charge for the treatment and medicine would be $25. The Court understands that the witness meant to say, or that at least such was the permissible construction of his language, that the services rendered and the medicine furnished were of the reasonable value of $25, and that the witness regarded the plaintiff legally bound by reason of said services and medicines furnished to pay said sum, but that by reason of the plaintiff's physical and financial condition, he might not be able to pay said amount, if any at all. Where a plaintiff is entitled to recover for medical attention and medicines necessary in the treatment of injuries, the defendant is liable, not for the amount actually expended or incurred by the plaintiff, but only for the reasonable or market value of such services, drugs, etc., as were reasonably necessary and for which the plaintiff has paid or has become legally bound to pay. The defendant, not being a party to the contract of employment between the plaintiff and the physician or nurse, or the contract of purchase between the plaintiff and the druggist, his liability, if at all, is not fixed by the amount paid or promised to be paid by the plaintiff for such services and supplies as were reasonably necessary in the treatment of the injuries, but the defendant's liability is limited to the reasonable or market value thereof. In this case the fact that the plaintiff sent for the physician, as testified by the former, and accepted his services, would, in the absence of some other agreement, create a legal liability to pay therefor on the part of the plaintiff. Therefore there were services requested, rendered and accepted, and evidence of the reasonable value thereof, which the Court deems to be all the law requires as to this character of proof.

Society Proceedings

COMING MEETINGS

Congress on Medical Education, Public Health and Medical Licensure, Congress Hotel, Chicago, Feb. 5-6.
Western Roentgen Society, Hotel Sherman, Chicago, Feb. 16-17.

CHICAGO MEDICAL SOCIETY

Meeting held Jan. 10, 1917

The President, DR. A. AUGUSTUS O'NEILL, in the Chair

Social Insurance: Its Bearing on the Profession and the Public as Observed in Great Britain and on the Continent

FRANCIS NEILSON, M.P., England: Americans are not informed as to the economic, industrial, social and religious condition of the British people. You cannot understand the genesis of insurance in Great Britain unless you know something about these conditions.

Those familiar with the history of the first half of the nineteenth century, and who have relied on newspaper reports for knowledge of current conditions, have assumed that Parliament has reformed certain conditions. It is a sad commentary on the economic conditions when you find people agitating for national insurance. There was no popular demand for the insurance act. It was sprung on Parliament and on the people. Perhaps no one was more surprised than Lloyd George himself. How was it possible for the Liberals to bring forward a measure that occupied half the time of Parliament without there being any demand for it? The national insurance bill was not in the official program put before the electors six months before the national insurance bill was introduced in the House of Commons. In the official program put before the electors in December, 1910, we asked for economic legislation, for constitutional reforms, for better housing laws, for electoral reforms, for educational reforms, and bills for many other things, but not for national insurance. It was simply a political dodge.

We had had a few years before a royal commission to inquire into the condition of the poor laws. Usually in Great Britain when we want to put a rather awkward question out of the way, we form a royal commission to inquire into it.

The Poor Law Commission reported that certain evils ought to be remedied by Parliament. This commission had the benefit of the investigations of Booth and Rowntree. I do not know to what extent the investigations of Booth and Rowntree on social evils are known in America. Booth showed that 12,000,000 British people, a little more than one fourth of the population of the United Kingdom, were living on the poverty line. We had employers' liability and the friendly societies. They did an enormous amount of good. But just before the insurance bill was introduced into Parliament, the government received returns from these friendly societies, showing that they were not all solvent but that through precariousness of employment there was something like a quarter of a million paying members lapsing in a year. Many of the smaller lodges, particularly in rural areas, were in serious financial condition. Under the old friendly society grant there was a great deal of malingering. Trade unions were also benefit societies. We had also small insurance

societies, notably the Provident and the Etna, which catered particularly to the small wage man. That was the condition before the bill was introduced.

When the royal commission issued its report, the Fabians and socialists got busy. The Fabians, headed by Sidney Webb and George Bernard Shaw, drafted a manifesto based on the recommendation of the Poor Law Commission urging that there should be sickness benefit, medical benefit, disablement benefit and other benefits given to those who could not help themselves.

At the election in December, 1910, candidates had to answer questions from the socialists and Fabians based on the suggestion of the Poor Law Commission. The majority of men elected pledged themselves to urge the government to bring in a bill dealing with the recommendation of the Poor Law Commission. Lloyd George introduced a social insurance bill in 1911. It was known as the "fourpence for ninepence measure," because under the bill the insured worker pays fourpence, the employer pays threepence, and the state pays twopence, ninepence or 18 cents to be the amount per unit to pay for the scheme of insurance, and for that ninepence the laborer gets medical sickness benefits, disablement benefits, consumption benefits and other benefits besides. All persons between the ages of 16 and 65, with an income of not more than £150 a year, or $800, were to be insured persons under the act. There are one or two exceptions to that. The men's funds and women's funds are held separate. The full sickness benefit was to be for twenty-six weeks.

No sooner was the bill introduced than a storm broke out against it. The trade unions at first would have nothing to do with it. They said it would disintegrate all the work they had done for generations. Domestic servants were to be included. Wage earners getting from 25 to 30 or 40 dollars a week arose in disgust against the idea of having to insure domestic servants. They said, "When my servant is ill, I pay the doctor for his services, and look after the woman's or man's health. I do not want the state to step in and tell me what to do with my servant." Employers objected because the government fixed on them the responsibility of seeing that the employee was insured and that his contributions were paid regularly. With the vast amount of casualties among laboring men, chore women, washerwomen, and so on, the government saw the difficulty of drawing all the people between the ages of 16 and 65 with an income of less than $800 a year into the purview of the bill. Let me tell you of one difficulty in the case of the casual laborer.

I live in an agricultural county, and I have a man come one day a week to work in my garden. This man works one day a week for me, the next day he works for some one else, and so on, for six days in the week. I asked in the House of Commons who was to be responsible for his insurance money. A gentleman on the other side said, "We think that the man who employs him the first day in the week should be responsible for his insurance money." And that is the law. The man who pays him the first day is responsible for his insurance money.

Not long after the bill was in the House of Commons, a bigger storm than any of those I have referred to broke, and that was the storm of the doctors. I never knew they had so much energy. It was amazing. The doctors organized a tremendous agitation against the bill, and the House of Commons for three months or more was receiving objections from doctors from all parts of the country. Lloyd George said:

"The doctors proceeded with their criticisms on five assumptions, all of them erroneous. They proceeded on the assumption that the government had fixed the capitation grant. They did not. The amount of capitation grant was to be fixed by the friendly societies with no appeal to anybody. That is not the bill. One assumption was that under the capitation grant families were included. They were not. Another assumption was the system of club doctors was to become universal and not from choice. That was not the bill. And the last assumption was that all the bad cases were included under the capitation grant. They were not. The five main assumptions on which the whole of this agitation was based were absolutely erroneous. They had absolutely nothing to do with the bill."

He said that the government was making the most liberal provision for the doctors that had ever been made in club practice in England. The chief trouble in the minds of the doctors was that if the limit of income was to be $800 a year and the insured was to get ninepence for fourpence, there would be temptation on the part of those whose income was much larger than $800 a year to get within the limits of the bill. Many of you are wondering why this arbitrary limit of $800? In England we have an antiquated, effete system of taxation, the so-called income tax. Before the war, under the income tax act, incomes of £160 a year and over were liable to taxation. One of Lloyd George's excuses for not limiting the bill to those who could not help themselves was that they had no data on the £2 household. The £2 household would be the £140 a year house, so they fixed this £160 or $800 because the income tax began at that figure. But there is more difficulty in ascertaining in Great Britain the returns from the household of £160 than there is in getting returns from the household of £16,000. Any one who knows the industrial and economic life of the English people must understand the enormous difference in the social position of the family getting £2 and the other family getting £3. The doctors said: "We know the households and what they can pay better than the treasury. We know the members of the family who are working, and we know that the arbitrary fixation of $800 a year will mean that many a household that is getting £4 or £5 a week will not pay as much as they ought until each individual worker comes within the purview of the insurance act." They were getting ninepence for fourpence, and the government could not stop them.

We want you to be wise in your agitation regarding health insurance legislation and not make the mistakes we did in Great Britain. We want you to familiarize yourselves with every phase of the subject before securing legislation. I suppose in the main that the doctors who attend the very poor were never better off than they are now in Great Britain. If you get the state to assure you payment, naturally you would favor that system in the majority of cases.

After the insurance act went into operation, we found that there were resentment and dissatisfaction all over the country. A number of amendments had to be passed, but I think it is perfectly fair to say that the English act has not had a fair trial in the two years and a few months it was in operation before the war broke out. An act of that kind should be tested for at least ten years before final judgment is pronounced on it.

Lloyd George was right when he said that this measure was only palliative; it is not curative. If it is to be made an effective measure, we must deal with the land question. So instead of bothering yourselves about national insurance, old age pensions, and the blunders that have been made in Germany and Great Britain over social insurance, let me urge you to study fundamental questions, economic questions, the land question in this country, and then get the capital value of the land not only on the surface, but as far down as you can go, including the ores, the clays, the coals, the slates, the marble and everything, and put taxation on them, and then, when you have opened up the country again, you will find that people, having an equal opportunity, will not rely on the state, but will get out like men and women and work for themselves and produce in abundance. Having abundance and health and leisure, they will find their own souls.

DISCUSSION

DR. WILLIAM A. EVANS discussed the proposed method of administration of the insurance act.

PROF. JAMES H. TUFTS, University of Chicago: The medical profession owes a duty to these now suffering worse in their health than the more well-to-do members in the community. We have a right to ask why so many are suffering and what can be done about it. Poorly paid people have much more ill health in proportion than the well-to-do. Part of poverty is due to ill health, just as part of ill health is due to poverty. A great deal of the burden of charity is due

to ill health. It is tremendously to the advantage of the public that the medical profession should receive proper remuneration: that it should be well paid to have the best equipment for its work and to encourage the right sort of men to go into the profession. The compulsory feature is one of the things we should think about seriously. It is necessary in providing for better health of the large group of people who now suffer that there should be a compulsory feature. It is more economical to administer a system that includes practically every one than a commercial insurance system in which the expense of collecting is 60 cents on the dollar. The larger proportion of people who work are not employed by establishments which make provision for sickness. The great proportion of workers are not members of trade unions which pay sick benefits. A large proportion of working people are not provided for under the existing scheme. The proposed bill does not admit as a carrier any society for profit.

DR. CHARLES J. WHALEN: I agree with Mr. Neilson that we are a nation of imitators. I believe that social or health insurance has come to stay in this country. There is a demand for social insurance largely because eleven European countries have so far adopted it. The medical profession of Illinois cannot afford to oppose health insurance. We may disagree as to the method of administration; we may not like the tentative draft of the bill; we may have objections to this or that part of the insurance law. But to the general subject of health insurance I think we shall have to agree.

In England the law has not been in force a sufficiently long time to form a fair estimate of its working value, but in the short time it has been in effect it is claimed that the average income of the physicians in England has materially increased. In Germany, where it has been in effect a great many years, the law has materially benefited the medical profession. It is claimed that the slums have disappeared; that sickness has materially diminished, and that the average life of the individual of Germany has increased from thirty-six to forty-eight years.

DR. K. A. ZURAWSKI: It is not safe to leave legislation which concerns such a large amount of varied interests to self-appointed sociologic bodies. The scheme of health insurance which Dr. Evans has explained to us is a good example of how a thing should not be. Health insurance should consider three different factors: the employer, the employee and the medical man. Medical men are not represented on these governing commissions, and this is a feature that we should try to correct. We want to be full copartners in the administration of health insurance. Another point the medical profession should insist on is free choice of medical attendants; but the choice of hospitals or the methods of treatment should not be left to the patient but to the medical man or to a commission of medical men.

DR. CARL BECK: Having seen some of the work of social insurance organizations in Germany and elsewhere, I can say that they have been unsatisfactory. The medical profession in Germany is very much dissatisfied. The *Münchener medizinische Wochenschrift* cautions physicians not to take this or that position as health insurance officer. It is bad for the people and for the physician. In some localities health insurance has done some good, while in others the effect has been the reverse. We should study all angles of the question before securing legislation.

MR. WILLIAM BEYE, Illinois Steel Company: I do not believe that any legislation which destroys individualism is sound. The scheme which is proposed is fundamentally state insurance. It is the taking over by the state of private endeavor. I believe that a man who cannot afford to insure himself in an insurance company or who does not himself provide protection against sickness should be an object of public charity. Anything else is contrary to sound fundamental principles. In West Virginia, Ohio, Washington and Wisconsin there have been insurance funds established for carrying insurance under the Workman's Compensation Law, and there is not a single fund in any of those states that is solvent, because government as it exists in this country cannot manage an insurance proposition on anything but a wasteful basis. Let us consider health insurance as an indemnity after sickness has occurred. It does not prevent sickness any more than life insurance prolongs life.

DR. WILLIAM D. PENNINGTON: The cure for this condition lies in prevention and not in remedial legislation. The way to cure this condition is to change the industrial situation, and that can be done only through legislation. Following the procedures outlined reduces the people to a condition of semicharity. If there is anything which people do not like, it is to feel that they have been forced to resort to charity for protection. The way to solve this problem is by legislation that will make it possible to make an honest and comfortable wage. The important field in medicine is not curative but preventive, and the way to cure this situation is to prevent it by enacting such laws and establishing such conditions as will make it possible for a man or woman who works in industrial institutions to make a living wage.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

January, XXI, No. 1

1 Chromosomes of Human Spermatocytes. H. L. Wieman, Cincinnati.—p. 1.
2 Changes in Composition of Entire Body of Albino Rat During Life Span. S. Hatai, Philadelphia.—p. 23.
3 *Experimental Studies on Origin of Vascular Endothelium and of Erythrocytes. F. P. Reagan, Princeton, N. J.—p. 39.

3. Origin of Erythrocytes and Vascular Endothelium.—Reagan summarizes the results of his extensive study briefly as follows: first, that mesenchyme in many regions of the body can turn into endothelium, and that endothelium is not an ingrowth from vessels on the yolk; second, that prevascular tissue can come from more than one germ layer; third, that mesenchyme cells which can form a given type of blood cell are not confined to a narrowly limited region of the embryo; fourth, that endothelium can transform into blood cells.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

January, LXXV, No. 1

4 *Fibromyoma Uteri and Cardiovascular Disease. B. R. McClellan, Xenia, Ohio.—p. 1.
5 *Prolapse of Uterus in Nulliparous Women. P. Findley, Omaha. —p. 12.
6 *Radium—Palliative. D. C. Moriarta, Saratoga Springs.—p. 21.
7 Standardization of Definite Procedures During Gynecologic Operations. E. A. Weiss, Pittsburgh.—p. 28.
8 *Modified Gilliam Operation and Its Ultimate Results. A. Goldspohn, Chicago.—p. 38.
9 Shortening of Round Ligaments by Transverse Suprapubic Incision. S. Stark, Cincinnati.—p. 47.
10 Pathology of Major Vestibular Ducts and Glands. J. E. Davis, Detroit.—p. 58.
11 Heat as Method of Treatment in Some Forms of Cavity Carcinoma. J. F. Percy, Galesburg.—p. 87.
12 *Surgical Treatment of Uterine Cancer. J. H. Jacobson, Toledo. —p. 97.
13 More Successful Surgery of Stomach. G. W. Crile, Cleveland. —p. 105.
14 Applying Animated Drawing to Teaching of Surgical Technic. W. J. Brownlow, Cleveland.—p. 110.
15 *Mechanics of Stomach After Gastro-Enterostomy. J. H. Jacobson and J. T. Murphy, Toledo.—p. 112.
16 Value of Pain, Jaundice and Tumor Mass in Differential Diagnosis of Diseases of Right Upper Quadrant of Abdomen. J. D. S. Davis, Birmingham, Ala.—p. 124.
17 *Excessive Drainage Complicating Surgery on Common Bile Duct. J. E. Sadlier, Poughkeepsie, N. Y.—p. 135.
18 Three Cases of Successful Repair of Urinary Bladder Fistulae Following Operations. J. N. West, New York.—p. 145.
19 Pelvic Varicocele. H. D. Furniss, New York.—p. 152.

4. Abstracted in THE JOURNAL, Oct. 21, 1916, p. 1252.

5, 6 and 8.—Abstracted in THE JOURNAL, Oct. 28, 1916, p. 1325.

12, 15 and 17. Abstracted in THE JOURNAL, Oct. 28, 1916, p. 1325.

American Journal of Orthopedic Surgery, Boston

January, XV, No. 1

20 *Analysis of Fifty-One Bone and Joint Affections Treated by Heliotherapy, with Special Reference to Tuberculosis. W. C. Campbell, Memphis, Tenn.—p. 1.
21 Two Cases of Fracture of Neck of Femur in Childhood. B. H. Whitbeck, New York.—p. 17.
22 Scoliosis. E. G. Abbott, Portland, Me.—p. 26.
23 Atlo-Axoid Disease; Report of Two Cases: Successful Operation in One. J. T. Rugh, Philadelphia.—p. 51.
24 Method of Marking Roentgen Plates. F. J. Fassett, Seattle.—p. 60.
25 Apparatus for Extension Attached to Bradford Frame. G. E. Bennett, Baltimore.—p. 61.

20. **Bone and Joint Affections Treated by Heliotherapy.**—Campbell strongly endorses heliotherapy which in his experience has proved beneficial, not only in tuberculous conditions, but other affections, especially acute sepsis.

Archives of Internal Medicine, Chicago

January, XIX, No. 1

26 *Clinical Value of Ambard's Coefficient of Urea Excretion. D. S. Lewis, Baltimore.—p. 1.
27 *Action of Several "Female Remedies" on Strips of Excised Human Uterus. J. D. Pilcher, Omaha.—p. 53.
28 *Present Significance of Amino-Acids in Physiology and Pathology. D. D. Van Slyke, New York.—p. 56.
29 *Progressive Muscular Dystrophy as Endocrine Disease. W. Timme, New York.—p. 79.
30 *Blood Changes in Albino Rats Following Removal of Spleen. C. C. Wolferth, Philadelphia.—p. 105.
31 Experiments on Origin and Conduction of Cardiac Impulse. J. A. E. Eyster and W. J. Meek, Madison, Wis.—p. 117.
32 *Occurrence of Nuclear Changes in Red Blood Cells Following Splenectomy. Q. O. Gilbert, Ann Arbor.—p. 140.
33 *Effect of Heat and Continuous Incandescent Electric Light in Experimental Arthritis. W. E. Simmonds and J. J. Moore, Chicago.—p. 153.
34 *Further Quantitative Study of Duodenal Blood-Derived Pigments, J. P. Schneider, Minneapolis.—p. 156.

26. **Ambard's Coefficient of Urea Excretion.**—The coefficient of urea excretion is subject to certain variations in normals, but any value below 0.06 or above 0.09, Lewis says, should be regarded as abnormal unless the excessive variation can be readily explained. The coefficient is absolutely independent of the blood urea concentration. Its level is governed by the condition of renal function. The coefficient is depressed in fever, in hyperthyroidism, in hypertension with early changes in the renal arterioles, and in early chronic diffuse nephritis. The depression is an evidence of increased renal activity due to irritation. The coefficient is raised in myxedema. There is an increase of the coefficient in myocardial insufficiency. The coefficient is above normal in nephritis with renal insufficiency. This increase is more evident in chronic diffuse nephritis than in the vascular type, due to the greater frequency of renal insufficiency in the former cases. The coefficient shows an increase long before there is any evidence of nitrogen retention in the blood. The coefficient gives an excellent means of following the changes in renal function and of measuring the rate of progress of the disease. In a few severe cases the coefficient varies without there being any evident change in the clinical condition. The prognostic value of the coefficient is considerable. Values above 0.2 are seen only in the severe cases, while constants persistently above 0.3 are found only in persons with a maximal impairment of renal function. A coefficient above 0.2 has a graver import in vascular nephritis than in that of chronic diffuse type. For an accurate prognosis repeated determinations of the coefficient are of the greatest importance.

27. **Action of "Female Remedies" on Strips of Human Uterus.**—The action of pulsatilla, unicorn root, blue cohosh, blessed thistle, viburnum, black haw and oil of valerian on strips of human uterus was studied by Pilcher. It was found that pulsatilla, aletris and oil of valerian lowered the amplitude of the excursions or completely inhibited them; but the action was not so prompt or so great as on the guinea-pig uterus in the same concentration. Caulophyllum put the strips into tonic contraction, but again the action was less than on the guinea-pig; the tone was not increased above the maximum, as was frequently the case with the guinea-pig. *Cnicus benedictus* and viburnum were inactive.

28. **Present Significance of Amino-Acids in Physiology and Pathology.**—In examining both the urine and the blood from a considerable number of patients with toxemia of pregnancy, Van Slyke found in no instance that either blood or urine showed an abnormal concentration of amino-acids or of intermediate protein digestion products. Consequently, he says, the responsibility for the toxemias of pregnancy cannot be left with the amino-acids. He has also tested the hypothesis that acidosis is to blame, with essentially negative results.

29. **Progressive Muscular Dystrophy.**—Timme reports a somewhat atypical form of progressive muscular dystrophy, rather resembling Erb's infantile type, of extremely benign and slow progress. It occurs as a hereditary affection, now in the fourth generation, which has disabled fourteen individuals. Of the seven living members with the disease, all but two have been examined thus far by Roentgen ray, and of these five, four show distinct changes in the pineal gland producing shadows in the roentgenogram. The fifth, a youth of 15 years, whose affliction is rather of different type than the others, in that the bony growth is abnormal, shows an enlarged sella turcica, but no shadows in the pineal as yet. Weighing all the evidence that is advanced by previous investigators to show derangement of the internal glandular balance in cases of progressive muscular dystrophy, and giving due significance especially to the changes produced by tumors and diseases of the pineal gland on the various tissues of the body, changes that resemble in character, if not entirely in degree or disposition those present in progtessive muscular dystrophy, Timme says, we must admit the extreme probability of a causal relationship between the two. If to this probability is adduced the evidence shown by cases of progressive muscular dystrophy of changes in the pineal gland demonstrated by roentgenology, the probability approaches pretty clósely to proof that disturbances of the pineal gland play an important rôle in the pathogeny of progressive muscular dystrophy.

30. **Blood Changes After Splenectomy.**—Results of splenectomy were studied by Wolferth in sixteen rats whose spleens were presumably normal; also in eight rats with enlarged spleens. Rats after excision of a normal spleen showed a slight transient anemia, slight tendency to leukocytosis, well marked increase in resistance of erythrocytes, no change in percentages of reticulated red cells. There was an inconstant increase in the number of nucleated red cells during the periods of anemia. Removal of enlarged spleens was followed by rapid and usually fatal anemia, hyperleukocytosis, marked increase in the number of nucleated and reticulated red cells and, in two cases, by distinct jaundice.

32. **Nuclear Changes in Red Blood Cells Following Splenectomy.**—There can be little doubt, Gilbert says, that a close relationship exists between the loss of splenic function and the appearance of large numbers of nuclear particles in the blood. The nuclear particles occur in large numbers within a few hours after the removal of the spleen, and they continue to be present after the blood has become in other respects normal. That they occur independent of a primary blood disease is shown by the fact that they occur after the spleen has been removed in normal animals and in men (traumatic rupture of spleen). In no other conditions are they found with such constancy and in such large numbers as after splenectomy. Gilbert's studies have shown, further, that there is no definite numerical relationship between the nuclear particles and the presence of true nucleated red cells, or any other quantitative or qualitative changes in the peripheral blood. His preparations indicate that the nuclear particles originate from otherwise normal nuclei, and that the particles do not show in themselves qualitative degenerative processes.

33. **Effect of Heat and Light in Experimental Arthritis.**—It is evident from the results of experiments made by Simmonds and Moore that the treated animals were decidedly benefited by heat and light so far as the arthritic manifestations were concerned.

34. **Blood-Derived Pigments.**—The blood in cases of pernicious anemia and hemolytic jaundice, both before and after and with and without splenectomy, was studied by Schneider.

He found that splenectomy apparently immediately and permanently reduces the excessive blood-derived pigments of pathologic hemolysis to a normal level. There is no proof that a recurrence of a pernicious blood and clinical picture after splenectomy is due to a reestablishment of excessive blood destruction. A plus hematopoietic-hemolytic index in a given case should, he says, be regarded as one factor favorable to permanent postoperative recovery.

Boston Medical and Surgical Journal

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35 Public Health Aspects of Leprosy. G. W. McCoy, Washington, D. C.—p. 43.
36 Some Experience Bearing on Medicolegal Value of Precipitin Test for Human Blood. E. L. Hunt and O. M. Mills, Worcester. —p. 48.
37 Fibroma of Mediastinum; Report of Case. S. J. Shen, Boston. —p. 53.
38 Fundamental Considerations in Treatment of Psychoneuroses. D. Gregg, Wellesley.—p. 57.
39 *Coincidence of Diabetes Mellitus and Syphilis. J. H. Barach, Pittsburgh.—p. 58.
40 Obliteration of Liver Dulness in Acute Perforation of Stomach and Duodenum; Report of Case. M. T. Field, Salem.—p. 60.
41 Study of Roentgenograms of Cases of Fracture of Long Bones at Massachusetts General Hospital. R. F. Sheldon, Boston.—p. 61.
42 Harvard Infantile Paralysis Commission and Its Work in Massachusetts. R. W. Lovett, Boston.—p. 62.
43 *Unusual Case of Umbilical Hernia. J. W. Lane, Boston.—p. 64.
44 Ringworm of Scalp and Alopecia Areata Appearing Simultaneously in Same Location. J. E. Lane, New Haven, Conn.—p. 65.

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45 Duty of Health Departments in Alcohol Question. H. Emerson, New York.—p. 77.
46 *Roentgenologic Follow-Up Report of Seventeen Cases of Pylorectomy for Ulcer. J. H. Lindsey, Fall River.—p. 80.
47 Obstetric Advances. J. O. Polak, Brooklyn.—p. 85.
48 Coefficient of Safety in Surgical Operations. H. L. Smith, Nashua, N. H.—p. 88.
49 Some Limitations in Roentgen Ray Evidence of Gastro-Intestinal Lesions. F. W. White, Boston.—p. 92.
50 *Three Cases of Thyroid Abscess. F. H. Lahey, Boston.—p. 94.
51 Anatomic Factor as Cause of Pyorrhea. C. M. Cobb, Lynn.—p. 95.
52 *Sterilization Treatment of Furunculosis. J. T. Bowen, Boston.—p. 96.
53 Treatment of Perforated Ulcer of Stomach with Duodenal Feeding Tube. L. C. Miller, Worcester.—p. 97.

39. Diabetes Mellitus and Syphilis.—Three cases of syphilis, in which the *Spirochaeta pallida* is active and in which the clinical symptoms of diabetes mellitus appeared, are recorded by Barach as occurring among thirty-one cases of diabetes seen within a period of two and one-half years. Such cases are supposed to be rare and the relationship of these two diseases is not generally recognized.

43. Unusual Case of Umbilical Hernia.—Lane's patient had suffered for several years from a small incarcerated umbilical hernia. The present illness for which she sought aid was ushered in by a severe pain in the mass at the umbilicus. This pain persisted three days, when it suddenly ceased. During this time the patient vomited nearly twenty times, but whether the vomiting was fecal, was not known. On the evening of the second day the vomiting ceased and there were several evacuations of the bowels following a dose of citrate of magnesia. On the third day a redness and tenderness appeared about the umbilicus and the hernial mass disappeared. On the fourth day the area of redness had extended, and was very much more tender. The physical examination was generally negative except for the abdomen. The abdomen was somewhat obese and was not distended, but lax and tympanitic. These was no protrusion at the umbilicus, but the depression thereof was unusually large and surrounded by an area of redness and tenderness and induration about 6 inches in diameter.

An operation was advised and performed. At a depth of 1½ inches in the fat about 2 ounces of foul smelling pus were evacuated. The pus had an odor characteristic of an appendix abscess. After the excess pus had been wiped out there appeared in the upper end of the wound a red mass about the size of a lemon. This appeared to be the sac of a hernia with a rent about ½ inch in diameter. In the left lower border protruding from this rent was a piece of animal bone, 1⅞ inches long and ⅝ inch wide. A piece of small intestine was strangulated in the sac, reddened but not gangrenous, and showing a perforation of ¼ inch in diameter, with its mucous membrane everted.

46. Roentgenologic Report of Cases of Pylorectomy for Ulcer.—Nineteen cases of pylorectomy for ulcer are included in Lindsey's report, with roentgenographic study of seventeen. There is prima facie evidence in this series that the stomach, after pylorectomy, tends to enlarge or dilate and thus compensates for the part removed at operation. In some cases, in which a wide resection has been performed, the stomach does not seem to have much opportunity or occasion to dilate. From the clinical information given all of these patients, with the exception of two, seemed in good condition. In general, the efficient manner in which these stomachs have performed their function, at such long periods after operation, testifies to the essential conservatism of an apparently radical operation.

50. Diagnosis of Thyroid Abscess.—Two signs which Lahey found to be present in his three cases are limitation of chin elevation and depression of the chin on the sternum when swallowing. These two signs, he believes, are of great significance in cases suspected of thyroid abscess. They are brought about by the action of the sternohyoid, sternothyroid and omohyoid muscles on the abscess beneath them. Pain results from tightening of these muscles, and this tightening as the result of swallowing may be prevented by depression of the chin on the sternum.

52. Sterilization Treatment of Furunculosis.—The principle of this treatment is simply to keep the skin so far as possible sterile; as free from micro-organisms as it is endeavored to maintain it in abdominal surgery. In order to effect this, the patient is directed to take a hot bath morning and night, scrubbing the whole body, including the head, while in the bath, with soap. After this thorough washing with soap and hot water, the skin is dried, and the whole surface again bathed, this time with a saturated solution of boric acid in water, with the addition perhaps of a small proportion of camphor water. After bathing thoroughly with the saturated boric acid solution, the skin is allowed to dry. Then the individual furuncles are treated by dressing them with the following ointment spread on cotton or linen and bound lightly on:

	gm. or c.c.	
℞ Boric acid	4	ʒj
Precipitated sulphur	4	ʒj
Carbolated petrolatum	32	ʒj

This procedure is repeated morning and night. Every stitch of linen worn next to the skin should be changed daily, and in the case of extensive furunculosis all the bed clothing that touches the individual, as well as the night clothing, should be subjected to a daily change. This treatment has been uniformly successful in Bowen's hands in the treatment of furunculosis.

Iowa State Medical Society Journal, Des Moines

January, VII, No. 1

54 *Uremia. L. G. Rowntree, Minneapolis.—p. 1.
55 Renal Sufficiency Tests. C. Van Epps, Iowa City.—p. 5.
56 Internal Secretory Organs. C. Stutsman, Burlington.—p. 9.
57 Pyloric Obstruction in Infancy. C. A. Waterbury, Waterloo.—p. 15.
58 Rupture of Intestine Due to Abdominal Trauma; Report of Cases. W. S. Conkling, Des Moines.—p. 20.
59 Submucous Resection of Nasal Septum. W. E. Patterson, Waterloo.—p. 24.

54. Uremia.—According to the predominance of functional or organic changes, Rowntree points out that it is extremely important to recognize whether the case is one in which the uremia is due to organic or functional changes. The development of uremia in a case of marked chronic interstitial nephritis offers little in a permanent way as a result of treatment, whereas in an identical clinical picture encountered in back pressure kidney such as seen in cases of enlarged prostate, the prognosis may be good. This is familiar to the surgeon but not as a rule to the internist. Rowntree refers to instances in which following the use of the constant catheter, forcing of fluids, and limitation of nitrogen intake,

uremia has disappeared, and in some instances, following a subsequent prostatectomy, renal function has returned practically to normal. In the vast majority of cases the treatment adopted is based on the theory of retention of products of metabolism. When edema of the brain is present the question of mechanical relief of cerebral pressure may need to be considered. Lumbar puncture may be of the greatest value in cases with marked headache dependent on cerebrovascular changes. If acidosis coexists alkalies should be administered but only to the point of correcting the acidosis, not indiscriminately in all cases of uremia nor in the large amounts recently advocated. In every case of uremia it is the physician's duty to determine if possible the underlying cause and to treat the case accordingly.

Journal of Abnormal Psychology, Boston

October-November, 1916, XI, No. 4

60 Persistent Complexes Derived Through Free Associations. C. S. Yoakum and M. C. Hill, Galveston.—p. 215.
61 Developmental Psychology of Stuttering. W. B. Swift, Boston. —p. 258.
62 Some Psychanalytic Studies of Character. L. E. Emerson, Boston. —p. 265.

Journal of Biological Chemistry, Baltimore

January, XXVIII, No. 2

63 Impure Picric Acid as Source of Error in Creatin and Creatinin Determinations. O. Folin and E. A. Doisy, Boston.—p. 349.
64 Estimation of Amino-Acid Nitrogen in Blood. J. C. Bock, New York.—p. 357.
65 *Comparative Biochemistry of Purin Metabolism. Presence of Allantoin in Mammalian Blood. A. Hunter, Toronto.—p. 369.
66 *Iodin Content of Food Materials. R. M. Bohn, Madison, Wis.—p. 375.
67 Colorimetric Methods for Determining Serum Cholesterol. P. G. Weston, Warren, Pa.—p. 383.
68 Mode of Action of Urease and of Enzymes in General. K. G. Falk, New York.—p. 389.
69 Id. D. D. Van Slyke and G. E. Cullen, New York.—p. 391.
70 Influence of Coagulation by Rennin on Gastric Digestion of Milk Proteins. J. T. Leary and S. H. Sheib, Nashville, Tenn.—p. 393.
71 Preparation of Guanidin. J. S. Sharpe, Glasgow.—p. 399.
72 Proteins of Central Nervous System. H. H. McGregor, Urbana, Ill.—p. 403.
73 Influence of Inosite on Excretion of Phenol in Dog. H. Dubin, Philadelphia.—p. 429.
74 *Studies of Infant Feeding. Chemical Changes Produced by Addition of Lime Water to Milk. A. W. Bosworth and H. I. Bowditch, Geneva, N. Y.—p. 431.
75 Saponin from Yucca Filamentosa. L. H. Chernoff, A. Viehoever and C. O. Johns, Washington, D. C.—p. 437.
76 New Method of Steam Distillation for Determination of Volatile Fatty Acids, Including Series of Colorimetric Qualitative Reactions for Their Identification. D. C. Dyer, Washington, D. C. —p. 445.
77 Mechanism of Cytolysis in Sea Urchin Eggs. A. R. Moore, New Brunswick, N. J.—p. 475.
78 Is Lysin Limiting Amino-Acid in Proteins of Wheat, Maize or Oats? E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 483.
79 Efficiency of Certain Milk Substitutes in Calf Feeding. R. H. Carr, G. Spitzer, R. E. Caldwell and O. H. Anderson, La Fayette, Ind.—p. 501.
80 *D-Mannoketoheptose, New Sugar from Avocado. F. B. La Forge, Washington, D. C.—p. 511.
81 Crystallographic and Optic Properties of Mannoketoheptose and of Osazones of Mannoketoheptose and Mannoaldoheptose. F. E. Wright, Washington, D. C.—p. 523.

65. **Allantoin in Blood.**—From the blood of the ox and the pig allantoin was obtained by Hunter in quantity sufficient for positive identification, while its presence in that of the horse and the sheep was rendered practically certain. Human blood, on the other hand, yielded no evidence of containing even a trace of allantoin.

66. **Iodin Content of Food Materials.**—It would appear from Bohn's studies that the presence of iodin in feeding materials of vegetable origin is accidental and serves no necessary nutritive function in the plant.

74. **Infant Feeding. Chemical Changes Produced by Addition of Lime Water to Milk.**—The addition of lime water to milk, which normally contains some insoluble dicalcium phosphate, Bosworth and Bowditch found results in the precipitation of more calcium phosphate, the insoluble phosphates under these conditions being a mixture of dicalcium and tricalcium phosphate, $CaHPO_4$ and $Ca_3P_2O_8$. The addition of lime water to milk brings the reaction of the serum toward the neutral point, the soluble alkalinity of the lime water being used up in the precipitation of the insoluble calcium phosphates mentioned above. When milk to be used for infant feeding is treated with lime water and finally diluted to such an extent that it has twice the volume of the original milk, or more, the soluble calcium and phosphorus may be reduced to amounts less than those which are present in human milk.

80. **D-Mannoketoheptose, New Sugar from Avocado.**—La Forge describes the isolation of a new ketose sugar, containing seven carbon atoms, from the fruit of avocado or alligator pear. The sugar exists in the free state in the fruit. The new sugar is both a ketose and a heptose and is accordingly the fourth natural ketose to be isolated, the other three being fructose, sorbose and ketoxylose, and is the first heptose to be found in nature, the previously known heptoses having all been prepared synthetically from hexoses.

Journal of Laboratory and Clinical Medicine, St. Louis

December, 1916, II, No. 3

82 Experimental Investigation of Certain Phenomena Relating to Action of Drugs on Rate of Oxygen Consumption in Animal Body. D. E. Jackson, St. Louis.—p. 145.
83 *Tissue Reactions to Various Products of Tubercle Bacillus. P. F. Morse and E. Stott, Detroit.—p. 159.
84 *Tonsillectomy During Course of Acute Rheumatic Fever. R. S. Morris, Cincinnati.—p. 168.
85 *Bacteriemias in Agonal Period. J. W. Fredette, Pittsburgh.—p. 180.
86 Diagnosis of Gastric Ulcer. J. W. Shuman, Sioux City, Iowa. —p. 189.
87 Detection of Semen. V. C. Vaughan, Ann Arbor, Mich.—p. 195.
88 Trypsin Broth—Ideal Medium for Making Blood Cultures. R. G. Owen, F. A. Martin and W. G. Pitts, Detroit.—p. 198.
89 Standard Method for Making Uniform Colloidal Gold Solution. W. K. Trimble, Kansas City, Mo.—p. 199.
90 Preservation of Erythrocytes for Wassermann Reaction. S. P. Reimann, Cleveland.—p. 200.
91 Simplified Complement Fixation Test. N. E. Williamson, Stockton, Calif.—p. 202.
92 Modification of Gerhardt's Test for Diacetic Acid in Urine. H. P. Barret, Charlotte, N. C.—p. 203.
93 Prevention of Frothing in Aeration Methods. A. B. Denison, Cleveland.—p. 204.

83. **Tissue Reactions to Products of Tubercle Bacillus.**—The tubercle bacillus according to Morse and Stott produces a microscopically characteristic lesion, not because it is a living particulate protein, but because its waxy substances act as a peculiar type of foreign body.

84. **Tonsillectomy During Acute Rheumatic Fever.**—With the subsidence of outward evidence of acute inflammation of the tonsils, Morris says, the danger of allowing them to remain in the body probably exceeds the danger of their removal. In all cases, he believes, an attempt should be made to relieve the joint tenderness by full doses of salicylates, before the operation is attempted. A certain amount of freedom of movement is necessary after the operation, to enable the patient to expectorate, etc.; during the height of an acute arthritis, pain on moving would often prevent the necessary changes in position.

85. **Bacteriemias in Agonal Period.**—Routine blood cultures taken by Fredette immediately after the death of 119 individuals reveal the presence of an unsuspected bacteremia in about one third of all fatal cases. Streptococci are the most frequent terminal bacterial invaders of the blood stream. The pneumococcus can be isolated in practically all cases of lobar pneumonia dying before the tenth day of the disease.

Journal of Nervous and Mental Disease, Lancaster, Pa.

January, XLV, No. 1

94 *Histopathology of Autonomic Nervous System in Certain Somatic and Organic Nervous Diseases. M. E. Morse, Boston.—p. 1.
95 Relation between Overactivity of Vagus System and Anaphylaxis. J. H. Smith, Richmond, Va.—p. 26.
96 Dispensary Work in Diseases of Nervous System. S. E. Jelliffe, New York.—p. 46.

94. **Histopathology of Autonomic Nervous System.**—The thoracicolumbar, semilunar and intestinal ganglia in seventeen cases were studied by Morse in connection with the central nervous system and the ductless glands. The cases

comprise two each of pellagra, senile dementia, paresis, cerebral syphilis, generalized (including cerebral) arteriosclerosis and one each of pernicious anemia; imbecility plus mitral insufficiency; dementia praecox plus lobar pneumonia; alcoholic dementia and generalized tuberculosis; manic depressive insanity and carcinoma of stomach; involutional depression and katatonic "hirntod." In no instance were the ganglia normal. In the cerebral syphilis cases, however, the changes were rather insignificant. The conditions found are grouped as acute and chronic degenerative changes in the nerve cells, and exudative manifestations in the stroma. Chronic degenerative changes in the ganglion cells predominated, as would be expected, in the chronic organic nervous diseases (paresis, senile dementia and cerebral arteriosclerosis). They were also found in ganglia in the vicinity or organs showing chronic lesions. Acute changes predominated in the case of katatonic "hirntod" (brain death), and in the local ganglia in certain pathologic conditions, as valvular heart disease and acute enteritis and peritonitis. Both acute and chronic conditions and those which might be either, as axonal reaction and neurophagia were present in pellagra, pernicious anemia, tuberculosis and involutional depression. A point of interest and importance is the special incidence of lesions in the ganglia, and their possible correlation with adjacent visceral conditions. In several instances the lesions were not universally distributed, but were limited to ganglia in the vicinity of affected structures. In an agitated depression changes suggestive of fatigue processes were found in the thoracicolumbar chain of ganglia, and in a case of katatonic "hirntod" marked lesions of an acute degenerative type, associated with neurophagia.

Journal-Lancet, Minneapolis

January 15, XXXVII, No. 2

97 Prophylactic Episiotomy. F. E. Leavitt, St. Paul.—p. 31.
98 *Tumors of Spinal Cord; Report of Eighteen Cases. E. H. Beckman, Rochester.—p. 35.
99 Deformities and Limited Motion in Joints Resulting from Causes Modifying Muscular Balance; Surgical Principles Involved in Treatment. C. N. Callender, Fargo, N. D.—p. 42.
100 Alimentary Tract as Focus of Infection. W. G. Richards, Billings, Mont.—p. 45.

98. Abstracted in THE JOURNAL, Dec. 2, 1916, p. 1694.

Kansas Medical Society Journal, Topeka

January, XVII, No. 1

101 Uses and Abuses of Ileosigmoidostomy. H. L. Charles, Atchison. —p. 6.
102 Process of Diagnosis. T. A. Jones, Liberal.—p. 8.
103 Endometritis. R. C. Henderson, Erie.—p. 10.
104 Some Unavoidable, or at Least Excusable Errors of Diagnosis, and Plea for Earlier and More Frequent Exploratory Operations in Abdominal Lesions. R. C. Dugan, Ottawa.—p. 14.

Medical Record, New York

January 13, XCI, No. 2

105 Cancer Problem and World War. W. S. Bainbridge, New York. —p. 47.
106 Diagnosis and Treatment of Poliomyelitis at Willard Parker Hospital. L. Fischer, New York.—p. 52.
107 Cultivation of Organism of Poliomyelitis on Solid Media. H. Greeley, Brooklyn.—p. 56.
108 *Benzoate of Mercury in Treatment of Syphilis. M. F. Lautman, Hot Springs, Ark.—p. 60.
109 Blood Fibrin Formation in Diagnosis. H. E. Smith, New York.—p. 61.
110 Which Is Safer, Ether or Nitrous Oxid and Oxygen? J. W. Seybold, Denver.—p. 63.
111 Laceration of Right Coronary Ligament of Liver; Report of Cases. M. R. Bookman, New York.—p. 65.

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112 Explosives Industry Poisons. W. G. Hudson, Wilmington, Del. —p. 89.
113 Symptomatic Psychoses; Report of Cases. E. S. Brodsky, Westport, Conn.—p. 98.
114 Cost of Treating Pulmonary Tuberculosis, with Special Reference to Wage Earners and Communities. J. F. Russell, New York. —p. 101.
115 Consanguinity; Method of Indicating Degrees of Relationship in Terms of Blood Cells. A. L. Benedict, Buffalo.—p. 104.
116 Case of Scarlet Fever, Malignant Type, Successfully Treated with Recovered Blood. M. J. Synnott, Montclair, N. J.—p. 106.
117 Rheumatic Child. J. Epstein, New York.—p. 107.

108. **Benzoate of Mercury in Treatment of Syphilis.**—The preparation which Lautman employs is an oily emulsion of ten parts of mercury benzoate and two parts of quinin and urea hydrochlorid in one hundred parts of white liquid petrolatum. It is prepared by first grinding up the quinin and urea hydrochlorid with a little of the oil in a mortar and then adding with careful trituration small quantities of the benzoate and oil. A perfect emulsion is obtained, which can easily be aspirated through a twenty-gage needle. The method of injection is the same as with any other preparation of mercury. Lautman gives 1 grain of the benzoate (10 minims) at a dose, repeating this three times a week. In twenty-five unselected and previously untreated cases the blood Wassermann was changed from a four plus to a negative in an average of eight weeks. The influence on the existing lesions was very favorable.

New York Medical Journal

January 13, CV, No. 2

118 Relation of Chronic Infections of Genito-Urinary Tract to Obscure Internal Disorders. H. H. Young, Baltimore.—p. 49.
119 Bete Noire of Therapeutics. W. B. Konkle, Montoursville, Pa.—p. 55.
120 Borderline Cases of Lower Abdomen. H. Grad, New York.—p. 57.
121 What is "Cause" of Disability? W. R. Riddell, Toronto, Ont.—p. 60.
122 Narco-Anesthesia. H. Beates, Jr., Philadelphia.—p. 61.
123 Physical Examination of Prisoners on Admission to Prison. F. L. Heacox, Auburn.—p. 64.
124 Visceral Amebiasis; Report of Unusual Case. A. Klein and A. I. Rubenstone, Philadelphia.—p. 67.
125 Foreign Body in Aorta. L. G. Kaempfer, New York.—p. 69.

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126 Medico-Educational Problems in Treatment of Atypical Children. G. Hudson Makuen, Philadelphia.—p. 97.
127 Grippe Pneumonia. B. Robinson, New York.—p. 100.
128 Fatal Streptococcemia in Epileptic. H. A. Knox, Skillman, N. J. —p. 101.
129 Generin; Agent which Induces Menstruation and Starts Gestation. J. Oliver, London.—p. 103.
130 Granuloma Pyogenicum; Report of Cases. M. G. Wohl, Omaha.—p. 106.
131 Giant Ventral Hernia. I. S. Haynes, New York.—p. 107.
132 Differential Roentgen Diagnoses in Bone Diseases. R. H. Boggs, Pittsburgh.—p. 112.
133 Surgical Value of Roentgen Ray. J. Rudis-Jicinsky, Chicago.—p. 115.
134 Paid Service in Hospitals. M. Schulman, New York.—p. 119.
135 Mercurialized Serums. F. E. Stewart, Philadelphia.—p. 121.
136 Id. L. Thompson, Hot Springs, Ark.—p. 123.

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January, XVII, No. 1

137 *Technic of Vaginal Plastic Operations for Cystorectocele and Prolapse of Uterus. R. T. Frank, New York.—p. 3.
138 *Results and Technic of Vaginal Subtotal Hysterectomy for Procidentia and Cystorectocele, Associated with Fibroid Growths or Fibrosis Uteri. H. N. Vineberg, New York.—p. 5.
139 Field for Pessary Treatment in Retroversion and Prolapse. R. L. Dickinson, Brooklyn.—p. 7.
140 *Neuropathic or Nervous Child. E. B. Angell, Rochester.—p. 13.
141 Radical Mastoid Operation. T. J. Harris, New York.—p. 17.
142 *Cerebrospinal Fluid in Fifty Cases of Cerebrospinal Syphilis. C. C. Sutter, Rochester.—p. 23.
143 Internal Secretions and Eye Diseases. O. Schirmer, New York. —p. 27.
144 Mistakes in Diagnosis of Ectopic Pregnancy. C. C. Lytle, Geneva. —p. 33.
145 Proper and Efficient Disinfection of House. G. W. Goler, Rochester.—p. 36.
146 Welfare Work of Metropolitan Life Insurance Company for Its Employees. L. K. Frankel, New York.—p. 38.

137 and 138. Abstracted in THE JOURNAL, June 24, 1916, pp. 2122 and 2123.

140. Abstracted in THE JOURNAL, June 3, 1916, p. 1815.

142. **Cerebrospinal Syphilis.**—Ten cases of cerebrospinal syphilis, 11 cases of tabes dorsalis, 20 cases of general paresis and 9 cases of taboparesis were studied by Sutter. Most of these examinations were made after the patients had been given considerable treatment. The globulin reaction was present in 7 cases, weakly positive in 2, and negative in 2 out of the 11 cases. The cell count increased in 8, normal in 1, and borderline in 2 cases. The highest count was 55. The Lange gold chlorid reaction in this series of 11 cases did not show any characteristic curve. Five cases showed some color

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changes but no marked color changes in the tubes were seen except in 2 cases which also showed a large increase in globulin and in the cell count. The Wassermann reaction was positive in the serum in 5 cases and in the fluid in 7 cases out of 11 cases. In 1 case it was negative in the serum and positive in the fluid. In all the other cases the findings were consistent. One case had decided ataxia but no other clinical signs. It was diagnosed as irregular tabes. The strongest and most characteristic reactions were seen in this series of 20 cases of paresis. All cases showed well marked color changes in the Lange colloidal gold chlorid reaction. The typical "paresis curve" was seen in all the tests. The highest cell count was 50. It was normal in 2 cases and there was only a slight increase in another. The globulin was positive in 16 cases, weak in 2 cases and negative in 2 cases. The Wassermann reaction was positive in every case except 2. One case showed negative reaction in the serum and positive in the fluid. Nine cases of taboparesis were studied. In all cases all the tests were positive.

Pennsylvania Medical Journal, Athens

December, 1916, XX, No. 3

147 Osteomalacia. L. Litchfield. Pittsburgh.—p. 161.
148 Chemical Diagnosis of Gallbladder Disease. M. E. Rehfuss, Philadelphia.—p. 166.
149 Value of Splenectomy in Diseases of Blood. E. B. Krumbhaar, Philadelphia.—p. 170.
150 Neuro-Otology; Intimate Relation of Ear to Nearly Every Part of Central Nervous System. I. H. Jones, Philadelphia.—p. 174.
151 How to Diagnose Cause of Dizziness. L. Fisher, Philadelphia.—p. 175.
152 Application of Neuro-Otology to Diagnosis of Actual Cases: Report of Cases. S. A. Brumm, Philadelphia.—p. 179.
153 What Can Be Done to Improve Milk Supply in Pennsylvania? L. A. Klein, Philadelphia.—p. 184.
154 *Fecal Incontinence. S. G. Gant, New York.—p. 190.
155 Obstruction of Common Bile Duct. C. D. Schaeffer, Allentown.—p. 195.
156 *Cholecystectomy; Operation of Choice. A. R. Matheny, Pittsburgh.—p. 198.
157 *Failing Heart; Recognition and Care of Certain Types. H. S. Anders, Philadelphia.—p. 201.
158 Recurrent Sarcomas at Limbus Treated by "Electric Desiccation." B. Chance, Philadelphia.—p. 205.
159 Goiter, Its Classification and Diagnosis. H. L. Foss, Danville.—p. 207.

154. Abstracted in THE JOURNAL, Oct. 14, 1916, p. 1180.
156. Abstracted in THE JOURNAL, Nov. 4, 1916, p. 1396.
157. Abstracted in THE JOURNAL, Oct. 28, 1916, p. 1328.

Surgery, Gynecology and Obstetrics, Chicago

January, XXIV, No. 1

160 *Removal of Stones from Kidney. W. J. Mayo, Rochester, Minn.—p. 1.
161 Clinical Data of Nephrolithiasis. W. F. Braasch, Rochester, Minn.—p. 8.
162 Treatment of Malignant Disease by Means of Deep Roentgentherapy and Electrothermic Coagulation. G. E. Pfahler, Philadelphia.—p. 14.
163 Field of Neurologic Surgery in General Hospital. J. A. Wyeth and W. Sharpe, New York.—p. 29.
164 *Case of Hematocolpos, Hematometra and Hematosalpinx in Woman of Seventy-Four Years. G. Gellhorn, St. Louis.—p. 37.
165 Anatomy, Pathology and Treatment of Uterine Prolapse, Rectocele and Cystocele. R. T. Frank, New York.—p. 42.
166 Case of Malignant Papillary Adenoma of Kidney. M. G. Wohl, Omaha.—p. 61.
167 Case of Opisthotonus Fetus. F. H. Falls, Chicago.—p. 65.
168 Vasopuncture and Medication for Seminal Vesiculitis. B. A. Thomas, Philadelphia.—p. 68.
169 *Point in Differential Diagnosis of Pyuria; Lavage of Kidney Pelvis. A. H. Curtis, Chicago.—p. 84.
170 *Hemostasis by Interposition of Muscle, Fat and Fascia in Parenchymatous Organs. E. H. Risley, Boston.—p. 85.
171 Advantage of Pleural Effusion in Giant Hydatid Cysts of Liver. J. A. Wall, Santiago, Chile.—p. 90.
172 Significance of Bladder Symptoms in Diagnosis of Renal Disease. A. J. Crowell, Charlotte, N. C.—p. 91.
173 Clinical Course of Cancer in Light of Cancer Research. H. R. Gaylord, Buffalo.—p. 94.
174 Constitutional Factor in Gynecology and Obstetrics. C. P. Noble, Philadelphia.—p. 98.
175 Treatment of Infected Gunshot Wounds. J. R. Eastman, Indianapolis.—p. 108.
176 *Reestablishing Patency of Ureter in Pyonephrosis by Catheter. M. Molony, San Francisco.—p. 111.
177 Enteroplasty for Relief of Sigmoid Obstruction. W. F. Fowler, Rochester, N. Y.—p. 113.
178 Intranasal Treatment of Frontal Sinusitis. R. H. Good, Chicago.—p. 115.
179 Prostatectomy. Clinical Study of Fifty Cases with Particular Reference to Postoperative Treatment. W. B. Dakin, Los Angeles.—p. 120.
180 Central Eyed Needle in Surgery. P. P. Cole, London.—p. 122.

160. **Removal of Stones from Kidney.**—From Jan. 1, 1898, to Dec. 31, 1915, 450 patients with stone in the kidney were operated on in the Mayo Clinic (484 operations). Three died, a mortality of 0.6 per cent. This percentage represents the number of patients who died in the hospital without regard to cause of death or length of time after operation. Mayo says that the results achieved were due more to the painstaking care with which the diagnoses were made, the function of the kidney estimated, and the patients prepared for operation, than to any purely technical feature of the procedures employed in removing the stones. The presence of the stones was shown by the roentgenogram. By means of the pyelogram the urologist was able to say with certainty whether the stone was in the pelvis, calyx, or parenchyma of the kidney. Forty-eight patients (9.9 per cent.) had stones in both kidneys. In these cases, the second kidney was found pyonephrotic, a condition necessitating nephrectomy. In three instances stones were found in a single kidney and in two instances in a horseshoe kidney. The condition was diagnosed before operation as nephrolithiasis in an anomalous kidney. In one case of horseshoe kidney the stone had caused a pyonephrosis in the left half. This portion of the kidney was resected and recovery followed. Renal stones were found in two patients with duplication of the renal pelves. In both, the caudal pelvis was involved; in one, a pelviolithotomy sufficed but in the other a resection of the upper half of the kidney was necessary.

There were two cases of stones in the remaining kidney after nephrectomy. Multiple stones in the parenchyma of the kidney are prone to recur. In one case in which Mayo removed twenty-eight stones from one kidney and twenty-six from the other, he reoperated on the patient within two years for stones in both kidneys. The following operations were performed: pelviolithotomy, 206 cases; combined pelviolithotomy and nephrolithotomy, 34 cases; nephrolithotomy, 40 cases and nephrectomy, 204 cases.

164. **Hematocolpos in Woman of Seventy-Four.**—In a woman of 74 who had menstruated normally until thirty-five years previously, severe pain, pointing to obstruction of the urinary flow, led to the detection of a large fluctuating tumor which filled the entire plevis and extended upward almost to the umbilicus. The vagina was occluded by senile atresia. Laparotomy in spinal anesthesia revealed the tumor to be an enormous hematometra and hematocolpos with bilateral hematosalpinx. Panhysterectomy was performed successfully by Gellhorn, and the tumor, which was connected with the vagina only by loose connective tissue, was removed unopened. Convalescence was undisturbed; the patient left the bed on the twelfth day after operation but succumbed to an embolism on the fifteenth day. The cause of bleeding into the occluded genital tract was an adenocarcinoma of the body of the uterus.

169. **Differential Diagnosis of Pyuria.**—If urine is not obtained by ureteral catheterization the catheter is withdrawn from the ureter, and a second catheter passed. In the event of persistent failure of urinary flow, an empty Luer syringe is applied to the large end of the ureteral catheter which had been used first, and the catheter contents are forced out on a glass side. Curtis says that examination of this material yields a diagnosis in most "dry tap" pus infection cases. Usually there is considerable stringy mucoid material in addition to other pathologic constituents. This procedure has several times clinched a diagnosis when it would otherwise have been impossible, or possible only by exclusion.

170. **Hemostasis by Interposition of Muscle, Fat and Fascia.**—Risley reports the results of experimental work on the use of these tissues in stopping hemorrhage in such organs as the kidney and liver, when other forms of hemostasis are either impossible or undesirable. The interposed tissue is taken from the patient's own body at the time of operation.

Muscle tissue is the ideal hemostatic. In order most effectively to stimulate fibrin formation it should be cut jaggedly with a knife and not crushed as with a scissors cut, nor should its hemostatic properties be extracted by its contact with salt solution. Fascia and fat act to a more limited degree as hemostatics; fascia more than fat, but both very much less than muscle. In the liver, however, both fascia and fat seem at times to be very efficient hemostatics. These tissues readily unite to the bleeding surface to which they are sewed and form a smooth, solid scar. Microscopic examination of specimens removed at varying intervals after operation show in Risley's series absence of sepsis, a beginning transformation of muscle into fibrous tissue, a partial absorption of fat and change into fibrous tissue, no change in fascial transplants, in practically every case a firm blending of the interposed tissue with the cut surface of the parenchymatous tissue, the formation of new blood channels and no degenerative changes of any note.

176. **Reestablishing Patency of Ureter in Pyonephrosis.**—In Molony's case a catheter was passed into the kidney with the aid of the cystoscope and brought out through a nephrostomy wound in the loin. To the point of this was sewed a No. 11 catheter. After removing the cystoscope, traction was made on the small catheter bringing the large one down through the kidney and bladder and out through the urethra. The catheter was drawn out as far as possible so that the largest diameter of it was in the pelvis and upper portion of the ureter. Six or 8 inches of the tip of the catheter were cut off close to the urethra and a strong plaited silk ligature was attached to the cut end. By pulling on the upper end in the wound the lower end was drawn up into the bladder with the plaited silk ligature hanging out through the urethra. This piece of silk ligature caused no irritation in the urethra, it also gave control from both ends when it was necessary to move the catheter up or down and adjust the lower end of it so as not to irritate the neck of the bladder. The catheter in the kidney, the ureter and bladder caused no inconvenience whatever, and the bladder was irrigated with solutions daily by inserting the nozzle of an irrigator into the upper end of the catheter projecting out of the wound. The large catheter was changed every few days by inserting an extra long wire stilet through it, withdrawing the catheter and inserting a fresh one over the stilet. The catheter was removed after three weeks. The patient increased in weight and vigor and was able to go about soon after the catheter was removed. By inserting the nozzle of an irrigator into the fistula, a pint of solution could be run through into the bladder in a few minutes, thus proving the patency of the ureter.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

December, 1916, XXI, No. 7

1 Roentgen Ray Appearances in Gas Gangrene. A. Savill.—p. 201.
2 Recognition of Gas within Tissues. H. M. Berry.—p. 213.
3 Sarcoma and Roentgen Rays. G. F. Gaarenstroom.—p. 220.

British Medical Journal, London

December 30, 1916, II, No. 2922

4 Bacillemia Due to Infection with B. Fecalis Alcaligenes. C. H. Shearman and T. G. Moorhead.—p. 893.
5 *Cytologic Examination of Joint Fluid as Aid to Prognosis in Penetrating Gunshot Wound of Knee. W. S. Lazarus-Barlow.—p. 895.
6 Psychanalysis. C. A. Mercier.—p. 897.
7 Certain Points Observed with Regard to Cerebrospinal Fever in Belfast Military District. W. J. Wilson, R. B. Purce and G. Darling.—p. 900.

5. **Cytologic Examination of Joint Fluid.**—Starting from the point that normal synovial fluid of the knee joint is acellular, Lazarus-Barlow says that when gunshot injury occurs and hemorrhage takes place into the synovia the ratio of leukocytes to erythrocytes found immediately must be that of normal blood, say, one leukocyte to 500 red cells. With the subsequent migration of leukocytes due to inflammatory reaction the number of white cells goes up. Thus he has notes of cases in which the ratios of leukocytes to red blood corpuscles were 3:500, 5:500, 9:500, 25:500, 50:500, 70:500, 125:500, 1,000:500. Further, normal blood contains roughly 70 per cent. polynuclears, 30 per cent. mononuclears, and the leukocytes found in the mixture of synovial fluid and blood immediately after the injury must be present in these ratios. If the subsequent migration of leukocytes be called forth by an "aseptic irritant" the ratio will remain unchanged or the percentage of mononuclears may ever increase. If the migration be called forth by a "bacterial irritant" the polynuclear percentage will increase. Hence, if a sample of knee joint fluid removed from a patient in a hospital shows, for example, 500 reds to five whites, and a differential count of the whites shows 50 per cent. polynuclears and 50 per cent. mononuclears, it differs fundamentally from another sample showing, for example, one red to four white, when the whites on differential counting are 99 per cent. polynuclears and only 1 per cent. mononuclears. The case from which the first sample was taken is clearly one in which infection is absent or negligible, the second is one in which it has undoubtedly occurred. In all Lazarus-Barlow has examined fluids and given prognoses in eighty-nine cases.

Indian Journal of Medical Research, Calcutta

October, 1916, IV, No. 2

8 Tests for Certain Narcotic and Anesthetic Drugs. E. H. Hankin.—p. 237.
9 Epidemiology of Malaria Fever in Malay Peninsula. C. Strickland.—p. 256.
10 New Species of Protanopheline from Malaya, Myzorhynchus Hunteri. C. Strickland.—p. 263.
11 Umbrosus-Like Anopheline from Malaya—Myzorhynchus Novumrosus. C. Strickland.—p. 271.
12 Investigation into Ankylostome Infection in Eleven Thousand Inhabitants of Darjeeling District of India. C. Lane.—p. 274.
13 *Gland Index in Tuberculosis. A. Lankester.—p. 285.
14 Some Facts Relating to Birth and Marriage Rates Among Brahmins. W. F. Harvey.—p. 303.
15 Birth Rates, Marriage Rates, Fertility and Proportionality of Sexes at Birth Among Some Fighting Indian Communities. W. F. Harvey.—p. 313.
16 Effect of Inoculating Rabbits with Cholera Vaccine Prepared in Various Ways. C. J. Fox.—p. 335.
17 Scurvy in Zhob, Baluchistan. A. L. Sheppard.—p. 340.

13. **Gland Index in Tuberculosis.**—There is abundant pathologic evidence to prove the frequency of enlargement of the bronchial and cervical glands in small children in cases of early pulmonary tuberculosis, and also as a primary manifestation of the disease in cases in which the lungs have not been affected. It would seem probable, moreover, both on clinical and pathologic grounds, that tuberculous infection in small children tends to enter the system via the upper part of the alimentary canal, the mouth, tonsils, fauces, etc., rather than through the respiratory tract. This would explain the frequency with which children exposed in their homes to infection from consumptive parents are found to suffer from tuberculous cervical glands. During the course of Lankester's investigation it was a constantly recurring experience to obtain from schoolchildren, showing glandular enlargement in a marked degree, the clearest possible recent history of tuberculosis contact. No prolonged examination of individual cases was made; the children were placed in lines and examined in succession by the two hands, one on each side of the neck. The submaxillary and cervical regions alone were palpated and all cases were marked as negative in which enlargement of the lymphatic glands was not instantly apparent. It was found that after the age of 12 years the percentage of cases of enlarged glands rapidly declined, showing that the enlargement itself is in most cases—whatever be its cause—of a temporary nature. The percentage of such cases among about 240,000 children examined in 1913, was 10.5, falling to 8.8 in 1914.

Journal of Laryngology, Rhinology and Otology, London

December, 1916, XXXI, No. 12

18 Etiology and Pathogenesis of Otogenic Sinusphlebitis. H. Mygind.—p. 497.
19 Choanal Polypus. W. S. Syme.—p. 515.
20 Case of Herpes Zoster Oticus. A. Ryland.—p. 518.
21 Von Bezold's Mastoiditis. H. L. Whale.—p. 520.

Journal of Tropical Medicine and Hygiene, London

December 15, 1916, XIX, No. 24

22 Meteorology of Malaria. M. D. O'Connell.—p. 285.

Lancet, London

December 30, 1916, II, No. 4870

23 Hygienic Lessons of War. H. R. Kenwood.—p. 1083.
24 Legends and Lore of Genesis of Healing Art. R. Crawfurd.—p. 1086.
25 Warfare on Brain. E. F. Buzzard.—p. 1095.
26 *Plant Hairs as Pseudoparasites. R. Donaldson and R. C. McLean. —p. 1100.
27 Outbreak of Cerebrospinal Meningitis. T. D. Halahan.—p. 1102.

26. Plant Hairs as Pseudoparasites.—An examination of the stools of a patient admitted to the hospital on account of diarrhea revealed the presence of large numbers of bodies which at the first glance resembled ancylostoma, and in addition small bladder-like structures. The former had a hooked pointed tip, while the other end, which was somewhat expanded, showed the presence of small spines. The whole appearance suggested the male form of ancylostoma. The size, however, was entirely against its being such, the largest being roughly 300 microns. Moreover, no oral aperture and no evidence of any internal organs could ever be detected and no ova could be found. The patient's blood, while showing a slight degree of anemia, gave no evidence of eosinophilia. A consideration of the foregoing facts pointed to the bodies as being plant hairs, and after further investigation they were identified as the grapnel hairs of the common runner bean.

Practitioner, London

January, XCVIII, No. 1

28 Twilight Sleep. H. Croom, H. Williamson, C. Berkeley and J. S. Fairbairn.—p. 1.
29 Treatment of Placenta Praevia. J. B. Hellier.—p. 25.
30 Some Experiences in Local Anesthesia. B. P. Campbell.—p. 30.
31 Anatomic Relations of Optic Nerves and Chiasma to Sphenoid Bone. G. F. C. Wallis.—p. 41.
32 Ultraviolet Light in Medicine and Surgery. F. S. Hawks.—p. 53.
33 Diagnosis in Cases of Massive Splenomegaly. G. Ward.—p. 62.
34 Beriberi. G. M. Findlay.—p. 69.
35 Difficult Dislocations in General Practice. W. Paulson.—p. 79.
36 Galvanometric Diagnosis and Dielectric Therapy. G. Mahomed.—p. 81.
37 Case of Traumatic Winged Scapula. S. H. Bennett.—p. 85.
38 Case of Egg Poisoning and Asthma. H. S. Palmer.—p. 88.

Paris Médical

December 9, 1916, VI, No. 50, pp. 513-528

39 Primary Infectious Febrile Jaundice. (L'ictère infectieux primitif à phénomènes généraux prédominants.) M. Garnier.—p. 513.
40 *Benefit from Intravenous Vaccine Therapy of Typhoid. (Vaccinothérapie de la dothiénentérie.) M. Petzetakis.—p. 516.
41 Skull Wounds from Small Scraps of Shells. (Les lésions du crâne par petits éclats d'obus; leurs complications.) A. Martin. —p. 521.
42 Displacement of the Carpus with Fracture of the Radius. (Subluxation en avant et en dehors du carpe gauche avec fracture cunéenne externe du radius et fracture de la base de l'apophyse styloide du cubitus.) A. Mouchet and R. Toupet.—p. 526.

December 23, No. 52, pp. 545-560

43 *Attenuated or Latent Forms of the Myocarditic Syndrome in Cervicosciatic Rheumatism. P. Nobécourt and Peyre.—p. 545.
44 Treatment in the Field Hospitals at the Front of Wounds of the Soft Parts. (Traitement des plaies des parties molles dans les ambulances de l'avant.) A. Schwartz.—p. 546.
45 *Sign of Glossopharyngeal Paralysis. M. Vernet.—p. 551.
46 Simplified Technic for Quantitative Test for Sugar. (Dosage du glucose.) P. Vansteenberghe and L. Bauzil.—p. 556.

40. Vaccine Therapy of Typhoid.—Petzetakis reports in detail two cases of typhoid in which vaccine therapy was applied by the intravenous route, without any other measures. The patients were men of 23 and 30 and the fever subsided, in both, the first or second day after the first or second intravenous injection of the vaccine. Similarly prompt results were obtained in five cases of typhoid in another's service, given the intravenous treatment. The charts show the unmistakable influence on the fever from the vaccine given the eighth and thirteenth day in one case and the tenth day in the other.

43. Attenuated Myocarditic Symptoms with Sciatic Neuralgia and Cervical Rheumatism.—Nobécourt and Peyre have encountered a number of cases in soldiers in which sciatica and meningeal reactions, manifest in the cerebrospinal fluid, were accompanied by rheumatic disturbances in the neck and dilatation of the heart, without other symptoms of latent myocarditis. Such cases are usually labeled cerebrospinal meningitis at first, but this is rendered untenable by the rapid improvement under rest in bed, lumbar puncture and sodium salicylate. No symptoms attract attention to the heart, but it will be found enlarged and the patient should be given a leave of absence for convalescence for a month or two. After this, if the heart is still enlarged, whether the beat is regular or not, the man cannot be considered cured, and should be sent to a sanatorium to recuperate further. The same principle should be applied to convalescents from acute articular rheumatism, typhoid or paratyphoid, scarlet fever, etc.

45. Glossopharyngeal Paralysis.—Vernet states that paralysis of the superior constrictor of the pharynx is generally responsible for difficulty in swallowing solid food. This muscle is innervated by the glossopharyngeal nerve. Paralysis of the pneumogastric or spinal nerve does not entail this difficulty in swallowing solids. Another feature of paralysis of the superior constrictor is a curtain movement of the posterior wall of the pharynx from the affected side toward the sound side. There is also disturbance in the sense of taste of the posterior portion of the tongue when the glossopharyngeal nerve is profoundly altered or has been severed. The diagnosis of glossopharyngeal paralysis may aid in determining the site and extent of other, associated paralysis. His chart showing his conception of the innervation of the pharynx differs in several respects from those of the textbooks.

Presse Médicale, Paris

December 18, 1916, XXIV, No. 70, pp. 577-592

47 Work in Munitions Factories as Affecting Pregnancy and Childbirth. E. Bonnaire. Title page.
48 *Pellagra. L. Sambon.—p. 577.
49 Spontaneous and Immediate Obliteration of Large Arteries of the Limbs in War Wounds. P. Bertein.—p. 581.
50 Fracture of Lower Jaw. (Les fractures de l'angle et de la branche montante du maxillaire inférieur.) A. Herpin.—p. 583.
51 Continuous Extension for Stump after Amputation. (Extension continue sur les moignons d'amputation.) A. Binet.—p. 584.
52 Principles for Apparatus for Reeducating the Maimed. (Conception nouvelle des appareils de rééducation.) Privat and Belot. —p. 584.
53 Present Status of Etiology and Prophylaxis of Epidemic Poliomyelitis. M. Romme.—p. 585.

December 21, No. 71, pp. 593-600

54 *Recurring Tuberculous Pleurisy. (La pleurite tuberculeuse à répétition. Piéry.—p. 593.
55 Electric Test for the Hearing. (Examen des surdités de guerre. Procédés nouveaux d'acoumétrie.) R. Foy.—p. 595.
56 *Throbbing in Felons, etc. (De la sensation du "doigt qui bat" dans le panaris.) R. Lutembacher.—p. 597.

48. Pellagra.—Sambon has maintained for eleven years that pellagra is probably an infectious disease, possibly the work of some protozoon, which is transmitted by the sting of some winged insect. Recently he has studied pellagra in the various foci of pellagra in Europe, the United States and the Antilles, and he has established its presence in the British Isles, in British Guiana, and in several parts of France. He has noted the prevalence of pellagra in quite young children in the endemic foci, also the great importance of the disease as a cause of insanity. He says that the history of pellagra as he traces it through the centuries and in different countries shows that it occurs in certain regions, like sleeping sickness, and that those endemic foci remain permanent. Outside of the endemic foci the disease can neither be contracted nor transmitted. No instance is known, he affirms, of transmission of the disease in the hospitals or asylums to the medical or nursing force or other inmates, or from a pellagrin to her nursing infant. In the endemic foci the disease is inevitably contracted, and usually within the first year. The period of incubation may be less than two weeks. The youngest pellagrin he has encountered was a 3 months babe. The recurrences of the disease are like those of malaria; the flare-up may occur in March while the new cases develop later, in April, May or June. In conclusion Sambon remarks that pellagra was known in Europe long before the introduction

of corn from America, and the geographic distribution of the cultivation or consumption of corn does not coincide with the distribution of pellagra, while prophylaxis based on the corn theory has proved futile.

54. **Recurring Tuberculous Pleurisy.**—Piéry calls attention to this benign and common form of tuberculosis. He discusses the factors, the symptomatology and the pathogenic import of this affection which subsides in two or three weeks under proper treatment, but is liable to return again and again when the same etiologic factors are encountered anew. In about 25 per cent. of the cases there is a little patch of cortical pneumonia below the pleurisy. The part of the pleura involved is usually at one or both of the fissures of the lungs, and these fissures should be ausculted when we have a patient with symptoms suggesting bronchitis.

56. **The Throbbing in a Felon, etc.**—Lutembacher ascribes the throbbing in a felon and in certain abscesses, headaches, etc., to the concentric pressure from the edema which raises the arteriole pressure to the level of the diastolic pressure, so that the arterial walls vibrate with each systole.

Progrès Médical, Paris

December 20, 1916, XXXI, No. 24, pp. 233-244

57 *The Scientific Literary Output of the War. (Des enseignements de la guerre germanique sur le front français.) E. Delorme.—p. 233.

58 *Treatment of Ulcerative Sore Throat and Stomatitis. (A propos du traitement de l'angine de Vincent et des stomatites ulcéro-membraneuses.) F. Ramond.—p. 241.

59 Treatment of Acute Gonorrhea. (Quelques détails pratiques sur le traitement de la blenorrhagie aigue aux armées.) Carle.—p. 242.

60 Deforestation and Depopulation in Certain Districts in France. (La dépopulation de nos campagnes.) A. Satre.—p. 243.

57. **The Scientific Literary Output of the War.**—Delorme is medical inspector general of the French army, and he remarks that not only the unprecedented number of the wounded but the fact that three fourths of all the physicians and surgeons of France have been engaged in war surgery, and the stability of the fighting line, have rendered possible the patient study of data and control of methods. Repair of wounded nerves soon became the impassioned study of surgeons and neurologists, as the frequency of paralysis attracted attention. He adds, "The number of stiff and ankylosed joints soon roused surgery to feel the responsibility for its previous inexcusable disdain for long treatments. Surgery even now will not admit the share in these deformities that belongs to apparatus which undoubtedly simplified surgical treatment at first but too often compromised the ultimate outcome. However this may be, the results we see, and often they are regrettable. Mechanotherapy has shown itself to be merely palliative." Delorme then reviews the works that have been published in book form, and in the medical and surgical journals, mentioning in detail the more important communications on war surgery.

58. **Treatment of Ulcerative Stomatitis and Vincent's Angina.**—Ramond cleans out each ulceration mechanically, then applies silver nitrate. The patient gargles first with a 1 per cent. solution of cocain. In five minutes the ulceration can be cleaned out. If there is slight hemorrhage this can be arrested by gargling with a solution of hydrogen dioxid. The cavity of the ulcer is then dried with cotton and then touched with a tampon moistened with a 1:50 solution of silver nitrate. The procedure is not painful but it has to be repeated daily for two or three days. The technic is the same for ulcerative stomatitis except that he sometimes uses a hard brush instead of the blunt curet to clean out the ulceration.

Revue de Chirurgie, Paris

1916, XXXV, No. 6, pp. 781-914

61 *Classification and Treatment of Crippling Callus Production in the Ankle. (Cals vicieux du cou-de-pied.) J. Tanton.—p. 781.

62 Extraction of Projectiles in the Pelvic Region. G. Léo.—p. 830. To be continued.

63 *Primary Tumors of the Aponeuroses. G. Bolognesi.—p. 876.

64 Ligation of Carotid Artery or Its Branches for War Wounds of Vessels; Eleven Cases. (Plaies vasculaires des régions cervicales et cervico-faciales.) J. Gatellier.—p. 899.

61. **Deforming Callus of the Ankle.**—Tanton remarks that any vicious consolidation of the ankle upsets the balance of the foot on the leg either sideways or forward and back, and there are numerous varieties of each form of disturbance. Radiography is indispensable, and he explains how to interpret the findings. Valgus flatfoot includes deviation of the axis of the foot as well as the sinking of the plantar arch, and it is important to detect even minimal disturbance of the kind as a guide to treatment. It is revealed by the imprint of the two feet side by side. The sagittal planes of the two feet then form an angle of 14 degrees, the two lines meeting at a point just as many inches back of the heels as the feet are long. A perpendicular line between the diverging lines shows the slightest deviation from normal. Another test is by outlining the foot with a pencil and then working the pencil under the sole to outline the region where the sole is not in actual contact with the paper on which it is standing.

63. **Primary Tumors of the Aponeuroses.**—Bolognesi analyzes the cases on record of a primary tumor developing in the membrane of the aponeurosis and reports the details of three cases of the kind. One was an ossifying fibroma of the thigh in a farmer of 22. The second was a giant cell sarcoma of the fascia lata of the left thigh in a woman of 77. The third was a hard fibroma of the left iliac aponeurosis in a young woman. The tumors had been first noticed from two to four months before their removal; the first patient had been kicked in the region by a horse and the tumor had been noticed soon afterward.

Berliner klinische Wochenschrift

November 20, 1916, LIII, No. 47, pp. 1261-1284

65 *Principles for Management of Kidney Disease. (Richtlinien in der Klinik der Nierenkrankheiten.) F. Umber.—p. 1261.

66 Difference in Agglutinating Property of Dysentery Bacilli Strains. (Unterschiede in der Agglutinabilität verschiedener Ruhrstämme und deren Bedeutung für die serologische Diagnose der Ruhr.) L. Dünner and I. Lauber.—p. 1266.

67 Case of Hereditary Progressive Dystrophy of Muscles. (Fall von hereditärer progressiver Muskeldystrophie mit Beteiligung der Gesichts-, Lippen- und Zungenmuskulatur.) C. W. Rose.—p. 1267.

68 *Proportion of Surviving Children Grows Less with the Number of Children in a Family. (Beitrag zu der Frage, ob Kinderzahl und Kindersterblichkeit zusammenhängen.) C. Hamburger.—p. 1269.

69 Physical-Therapeutic Measures for the War Sick and Wounded. (Ueber den jetzigen Stand der Anwendung physikalischer Heilmethoden für Kriegsbeschädigte.) A. Laqueur.—p. 1271.

70 The Problem of the Children from Rape. (Das Kriegskinderproblem.) K. Bauchwitz.—p. 1281; (Erwiderung.) H. Lieske.—p. 1282.

71 Special Diet Food Cards Seldom a Reliable Basis for Morbidity Statistics. (Nahrungsmittelatteste und Statistik.) H. Kohn.—p. 1283.

65. **Principles for Management of Kidney Disease.**—Umber classifies pathologic kidneys in three groups, 1, those with degenerative processes in the epithelial segments of the kidney—the nephroses; 2, those with inflammatory processes in the glomeruli, and 3, those with primary arteriosclerotic changes in the smaller kidney vessels. The prognosis in the first type is good; in only three of his forty-eight cases of nephrosis did the condition progress to shriveling (amyloid contracted kidney in two of the three). There was neuroretinitis in five of his 170 cases of acute glomerular nephritis, although in two of the five the kidney affection had subsided. Acute glomerular nephritis usually subsides under proper treatment; otherwise it passes into a chronic phase. This acute type is the one observed in soldiers on active duty; cold and wet predispose to it, but the actual cause is toxic action, streptococci and certain bacteria having apparently a special affinity for the glomeruli.

He insists that the degree of albuminuria is of no import for the prognosis. The highest albumin content is found in the first, the mildest and most curable type, the nephroses—which in their acute and subacute phases correspond to the old conception of parenchymatous nephritis. Albuminuria is merely a sign that the kidney is not entirely intact. It has absolutely no bearing on the prognosis in comparison to the tests of the diluting and concentrating power of the kidney, the retention of nitrogen, and the blood pressure findings. The same may be said of the formed elements in the urine;

the sediment is most striking in the first type, the nephroses, but it is of little import for the prognosis unless blood corpuscles in the kidney urine suggest involvement of the glomeruli.

This classification allows rational treatment as, in sparing the kidney, all we need to spare is the special function which has become impaired. In the first type, the nephroses, the elimination of water and salt is defective and there is a tendency to edema. "Consequently in this form it is better to refrain from attempts to flush out the kidneys by copious ingestion of water. Salt also should be restricted. The trouble is extrarenal, the vessels outside of the kidneys having become abnormally permeable under toxic influences. Restriction of water is the more rational under these conditions as the sewerage power of the kidneys is not impaired otherwise. Restriction to milk is wrong, as there is too much salt and fluid in the milk, if enough milk is taken to supply the needed calories; 3 liters of milk contain 5 gm. of salt. With chronic nephroses, the elimination of water proceeds approximately normally, so the intake need not be reduced.

In the second type, glomerular nephritis, when acute, he orders 1.5 liters of fluid a day. In the second stage of the chronic form, manifested by albuminuria and gradually rising blood pressure, dietetic measures have no influence although excesses in eating and drinking should be avoided. In the third stage, fluids should be given up to 3 liters a day to postpone uremia unless there are cardiovascular contraindications. The same applies also to the malignant form of the third type, sclerosis of the finer kidney vessels. The benign type does best with restriction of fluids, as this spares the heart and peripheral vessels; he warns against more than 1 or 1.5 liters of fluid a day in this type. The first type, the nephroses, do not require restriction of albumin in the diet, but this is imperative in glomerular nephritis at all stages and in the malignant form of the third type. It is astonishing how the azotemia and with it the subjective disturbances subside when the intake of nitrogen is restricted. The albumin content of a liter of milk—5.5 gm. nitrogen—is more than azotemic nephritics can stand. From 3 to 5 gm. a day is the limit for them. The salt should be limited to 5 gm. a day; this amount can be taken in acute glomerular nephritis as well as in azotemic and sclerotic nephritis, but it is far too large in the first type, the nephroses, and also when glomerular nephritis is associated with a nephrosis, unless there is no tendency to edema.

Venesection is useful in azotemic kidney disease, especially when combined with intravenous hypotonic saline or a 41 per cent. grape sugar solution. With uremic convulsions from swelling of the brain, when there is retention of water and salt, as in glomerulitis plus nephrosis, lumbar puncture is the sovereign remedy.

In the first type, the nephroses, the retention of salt and water is due to extrarenal causes, to abnormal permeability of the vessels elsewhere. We know of no drugs that will modify this toxic permeability, but it corrects itself, often suddenly and unexpectedly, so that the fluids pass on into the kidneys and diuresis is increased, regardless of what drugs may or may not have been given. This, he exclaims, is unfortunately often attributed to the medicines that have been given. Hence the vogue of diuretics. Umber thinks that their efficacy in kidney disease without cardiovascular disturbance is but slight. They may increase the output of water a little in azotemic kidney disease, but the elimination of waste products is not increased by them. The drugs given are also liable to be retained themselves and have dangerous cumulative effects. This is particularly menacing with digitalis and strophanthin in the malignant form of the arteriosclerotic kidney.

He defines the clinical picture of the first type, the nephroses, as normal or nearly normal blood pressure, no retention of nitrogenous waste and no secondary cardiovascular disturbances, but extrarenal retention of salt and water, the concentrating and diluting power of the kidney unimpaired. The third type, the arteriosclerotic, in which the finer kidney vessels are the seat of primary sclerotic changes, may be merely one part of a general tendency to arteriosclerosis. In the benign form the kidney disturbances are overshadowed by those from the arteriosclerosis in the heart or brain, but still they are responsible for the high blood pressure, with slight or no albuminuria, and for the tube casts. When the kidney disturbances predominate, we have the malignant form, the chronic interstitial nephritis of the old school, true contracted kidney in its narrower sense. Analysis of his 150 cases of sclerotic kidney has demonstrated that the outcome of the cases—whether they are to be benign or malignant—depends on whether the glomeruli get a chance to functionate properly or not. When they can work properly, the kidney trouble is of minor importance, and the patient dies at last from the heart or brain arteriosclerosis.

68. **Death Rate in Relation to Birth Rate in Families.**—Hamburger tabulates statistics from 1,042 families in 1908 and 1,047 in 1913 showing the number of conceptions and of children surviving to the sixteenth year. The figures show a constant decline from over 76 per cent. surviving to the sixteenth year in families with one child and over 66 and 72 per cent. in families with two children, to only 30.66 and 30.37 surviving in the families with most numerous conceptions. The number of children that died also showed a constant increase from the one and two children families to the more numerous families.

Deutsche medizinische Wochenschrift, Berlin

November 30, 1916, XLII, No. 48, pp. 1469-1500

72 Suture and Plastic Operations on the Eyeball Immediately after Injury. (Die Erfolge der Augapfelnaht und -deckung zur Erhaltung des Auges bei frischen Augapfelverletzungen.) F. F. Krusius.—p. 1469.

73 Visual Disturbances after Skull Injuries. (Sehstörungen bei Schädelverletzungen.) T. von Mutschenbacher.—p. 1471.

74 *Ostitis of Paratyphoid Origin in Soldiers. (Zur Frage der Ostitis bei Kriegsteilnehmern.) R. Stephan.—p. 1473.

75 The Question of Simulation in Soldiers. G. Voss.—p. 1476.

76 "Five-Day Fever." (Zur Frage des Fünftagefiebers.) Schwinge.—p. 1477.

77 Elimination of Uric Acid in Disease of Glands with an Internal Secretion. (Ueber Harnsäureausscheidung bei einigen Fällen von Blutdrüsenerkrankungen.) J. Nowaczynski.—p. 1478. Concluded in No. 49, p. 1510.

78 *False Rust's Disease. (Malum Rustii.) Hnatek.—p. 1480. Commenced in No. 47, p. 1445.

79 Stereoscopic Localization of Projectiles. (Ueber den Stereoplanigraphen und seine Verwendung zur Lagebestimmung von Geschossen.) Drüner.—p. 1482.

80 Field Bedstead. (Eine Feldbettstelle.) K. Laubenburg.—p. 1486.

74. **Paratyphoid Ostitis.**—Boring pains in the legs, suggesting ostitis, accompanied by leukopenia and relative lymphocytosis, seem to be a tardy phase of paratyphoid B infection, testifying to renewed toxic injury of the blood-producing system. Stephan relates that only 10 per cent. of the numerous cases of paratyphoid B that he has encountered presented the classic clinical picture of abdominal paratyphoid or paratyphoid gastro-enteritis. In 80 per cent. the disease ran a protracted course indicating a chronic infection of the blood-producing system, the lymph glands, spleen and bone marrow. In this chronic course a wave of renewed toxic action on the bone marrow may cause pains suggesting a new and different infectious process in the bone involved. This may occur without any rise in temperature, but the number of leukocytes drops and the proportion of lymphocytes increases. Stephan suggests that one reason for the different course of infectious diseases in military and civilian circles is that direct contact is mainly responsible for the infection in army circles, while elsewhere contamination of food, etc., must be incriminated.

78. **Gumma and Gout Involving Upper Vertebrae.**—The first instalment of Hnatek's communication was summarized on page 230. He here describes a case of supposed Rust's disease in a man of 35 who had had for four months pains and stiffness in the suboccipital vertebrae. It proved to be the work of a syphilitic gumma and, after this had retrogressed under specific treatment, a defect was left in the arch of the atlas. In another case described, a woman of 48 had been subject to intense migraine from childhood. At the menopause it had become transformed to neuralgia in the occiput, radiating to the temples. Typical attacks of gout had occurred at times during the last ten years, mostly in the hands and arms, one joint becoming affected as another returned to

approximately normal, each attack dragging along for weeks. Finally the occiput region became very painful; any pressure on the atlas region caused intense pain, as also any movement of the head. This state of things continued for eight days and then gradually subsided to complete disappearance of all local symptoms in this region by the end of six weeks. Hnatek says that the whole trouble was thus shown to be merely a gouty attack, localizing at this point. The woman took antineuralgics and electric treatment, the high frequency current. Gout, syphilis and articular rheumatism hence must be excluded before we label a case as Rust's disease.

Medizinische Klinik, Berlin

November 26, 1916, XII, No. 48, pp. 1249-1274

81 *Stomach and Bowel Trouble from Standpoint of Fitness for Military Service. (Ueber die militärische Dienstverwendungsfähigkeit der Magen- und Darmleidenden.) L. Schüller.—p. 1249.

82 *Venesection plus Autoserotherapy. (Eigenserum und Aderlass—Lehre und Anwendung.) B. Spiethoff.—p. 1252. Commenced in No. 47, p. 1223.

83 Cerebellar Ataxia after Diphtheria. Serog.—p. 1255.

84 *Austin's Water Test Meal for Examining the Secretory Function of the Stomach. (Untersuchungen über die Wassermahlzeit nach Austin zur Bestimmung der sekretorischen Leistungsfähigkeit des Magens.) B. Brendle.—p. 1257.

85 Improved Technic for Conservative Amputation of Knee and Foot. Stern.—p. 1258.

86 Treatment of Stump Ulceration. (Zur Behandlung der Stumpfgeschwüre.) E. Fuchs.—p. 1259.

87 Improved Technic for Artificial Leg. (Die Macholdprothese.) R. Pressburger.—p. 1260.

88 Indications for Obstetric Operations by the General Practitioner. (Zur Indikationsstellung bei den geburtshilflichen Operationen des praktischen Arztes.) H. Walther.—p. 1261. Concluded.

81. **Gastro-Intestinal Disease and Fitness for Military Service.**—Schüller has been impressed by the rarity of nervous dyspepsia among the troops on active service. Even those previously subject to it seem to feel well and stand the conditions on the firing line as well as others. Excessive gastric secretion does not impair military efficiency if an ulcer can be positively excluded. He has found anacidity much more common than in peace, as also gastric ulcer, active or healed. A number of men with gastro-enterostomy have gone through the campaign as efficiently as others. He has examined about a hundred.

82. **Venesection Plus Autoserotherapy.**—The first part of Spiethoff's article was reviewed in these columns, January 27, p. 310, abstr. 44. He here presents data which confirm that robust persons show no permanent consequences contraindicating rapidly repeated venesection. One robust young woman with eczema but otherwise healthy, had a red blood count that ranged from 4,136,000 to 4,872,000 with 80 per cent. hemoglobin, in the course of the third day, after withdrawal of 100 c.c. blood seven times within thirteen days. The white count was 12,000 at first and 9,200 at the last. For less robust persons, not over 30 or 50 c.c. of blood should be removed. On the whole the effect seems to be a modification of the general organism or of certain parts of it. This is most evident when drugs and other measures, which had lost all power to induce a reaction on the part of the tissues, reacquired therapeutic efficiency after reinjection of the patient's own serum or injection of sodium nucleinate. The benefit from venesection and the reinjection of serum is best explained by stimulation of the production of antibodies and their mobilization.

84. **The Water Test Meal.**—Brendle remarks that the difficulty in obtaining white bread and tea for the Ewald test meal has led to the adoption at the Freiburg policlinic of Austin's water test meal in testing stomach functional capacity. In 150 cases the parallel findings with the Austin and Ewald test breakfasts were compared in five sets of tests. The findings confirmed that a single water test breakfast according to Austin is sufficient for determination of the chemistry of the stomach. Nervous inhibition, with achylic findings, is more liable to be induced with the Austin than the Ewald-Boas technic. But this can be warded off more or less completely by addition of raspberry juice to render the test breakfast more palatable, and giving the patient something to chew on and swallow, such as a malt bonbon. It is a great advantage of the Austin method that bile, blood, relics of food, etc., in the stomach content show up much better, and further tests, like Salomon's test for albumin, can be more easily applied. Brendle uses 100 c.c. of water plus two tablespoonfuls of raspberry juice. The malt bonbon is calculated at 10 gm.

Münchener medizinische Wochenschrift, Munich

November 14, 1916, LXIII, No. 46, pp. 1613-1648

89 Silver Preparation Salve in Treatment of Vaginal Gonorrhea. (Behandlung der Frauengonorrhöe mit Protargolsalbe.) E. Kuznitzky.—p. 1613.

90 *The Sugar in the Blood and Dietetic Treatment in Addison's Disease. (Blutzucker und Diättherapie bei Morbus Addisonii.) L. R. Grote.—p. 1614.

91 Paratyphoid A; Two More Cases. (Zur Klinik des Paratyphus A.) F. Loewenthal.—p. 1616.

92 *Symptomatology of Patent Ductus Arteriosus or Botalli. J. Forschbach and M. Koloczek.—p. 1617.

93 Antitoxin Not Required in Nasal Diphtheria as a Rule. H. Schwerin.—p. 1619.

94 Ring through Stump to Aid Control of Artificial Leg. (Einige Bemerkungen über Stumpfbehandlung und über ein neues, durch die Oberschenkelstumpfmuskulatur bewegliches künstliches Bein.) Blencke.—p. 1633.

95 *"Five-Day Fever." (Zur Kenntnis des "Fünftagefiebers"—Febris Wolhynica.) F. Sachs.—p. 1635.

96 Operative Treatment of Contracture of Knee and Elbow. G. Hohmann.—p. 1639.

97 Harpoon Method for Locating Projectiles with Roentgen Rays. (Die Weskische Geschossharpunierung. Leitsätze zu einer schulgemässen Operationstechnik der Geschossentfernung auf Grund praktischer Erfahrungen.) A. Schäfer.—p. 1640.

98 Two Scraps of Shell Entering through One Wound and Diverging. (Schädelgranatsplitterssteckschuss, 2 Splitter bei einem Einschussloch.) O. Kiliani.—p. 1642.

99 Superior Advantages of Adjustable Pulley Extension for the Arm while in Bed. (Armbewegungs-Rollenzugapparat im Bett.) Frensdorf.—p. 1644.

100 Treatment of Hysteric Loss of Voice, etc. (Zur Behandlung hysterischer Stimmstörungen.) H. Curschmann.—p. 1644.

101 Management of Functional Neuroses. (Vorschläge zur Versorgung der funktionellen Neurosen.) Schlayer.—p. 1645.

102 *The Wassermann Reaction in Typhus. (Auftreten Wassermanscher Reaktion bei Fleckfieber.) Bittorf.—p. 1646.

103 Suture of Carotid Artery. (Resektion und Naht der A. carotis communis.) v. Parczewski.—p. 1646.

104 Advantages of Grinding Instead of Chopping Bones for Soup Stock. (Vergleichende Untersuchungen von Brühe, die aus zerschlagenen und gemahlenen Knochen hergestellt ist.) O. Gottheil.—p. 1647.

90. **Improvement Under Dietetic Measures in Addison's Disease.**—Grote reports a case of severe primary Addison's disease, the young man lying apathetic in bed. No benefit was apparent under suprarenal treatment until efforts were made to increase the sugar content of the blood by feeding extra sugar. Rapid improvement followed, the appetite increased, he gained in weight, and by the end of eight weeks could walk for an hour without special fatigue, and the pigmentation retrogressed. Grote cites evidence to show that the sugar content of the blood has been found abnormally low in two thirds of the cases of pronounced Addison's disease examined to date. At the same time, the tolerance for sugar is exceptionally good. In his case there was no elimination of sugar in the urine after 100 gm. of levulose or 200 gm. grape sugar. At the beginning of treatment the sugar content of the blood was 0.05 per cent.; in two weeks after 100 gm. sugar had been added to the daily ration—which already included 300 gm. carbohydrates—the sugar content of the blood rose to 0.056 per cent.; in eight weeks it was 0.1 per cent., and the ninth week 0.9 per cent., the rise constantly and closely paralleling the clinical improvement. The blood was examined mornings before breakfast. Arnoldi recently announced that carbonated baths seemed to stimulate suprarenal functioning, as he found the sugar content of the blood higher after such baths—an "asphyxia hyperglycemia." Grote consequently gave his patient carbonated baths in addition to the dietetic measures and the organotherapy. The literature bearing on the various questions involved in treatment of Addison's disease is discussed in detail.

92. **Symptoms of Patent Ductus Arteriosus.**—The two patients were girls of 10 and 17, both with curvature of the spine, and the older girl had never menstruated. In both during prolonged inspiration and the Valsalva test the systolic murmur dwindled or disappeared entirely, while the Roentgen shadow showed a flattening of the second arc of the heart's left outline—all demonstrating a reduction in the

pressure in the aorta under the influence of the increased alveolar pressure.

95. **"Five-Day Fever."**—Sachs reports nine cases and declares that this name for the disease is absurd, as there is no such regularity in the recrudescences of the fever. The term "Wolhynic fever" is also irrational as the disease is not restricted to Wolhynia. He suggests as the most descriptive term tibialgic or neuralgic fever.

102. **Wassermann Reaction Positive in Typhus.**—Bittorf some time ago called attention to the appearance of positive Wassermann findings in nonsyphilitics after injury or destruction of organs particularly rich in lipoids, as with cancer of the liver and tumors in the brain or spinal cord. As these organs are especially involved in typhus, the blood in this disease likewise responded positively to the Wassermann test in the two cases he has examined for the purpose. There was nothing to suggest syphilis in either case, and the response was repeatedly negative when tested from six to nearly eight weeks later.

Wiener klinische Wochenschrift, Vienna

December 7, 1916, XXIX, No. 49, pp. 1547-1578

105 Study of Limping. (Ueber das Hinken.) A. Saxl.—p. 1547. To be continued.

106 *Diagnostic Agglutination of Proteus Bacilli in Typhus: the Weil-Felix Reaction. (Vorkommen der Weil-Felixschen Reaktion bei Fleckfieber vom Balkankriegsschauplatz.) J. Cancik.—p. 1552.

*107 *Special Type of Roentgen Shadow with Chronic Gastritis. (Ueber die Erkennbarkeit einer bestimmten Form von chronischer Gastritis im Röntgenbilde und deren Bedeutung für die Ulcusdiagnose.) G. Schwarz.—p. 1554.

108 *Galvanopalpation of the Abdomen. M. Kahane.—p. 1557.

109 *Changes in Leukocyte Picture after Vaccination against Typhoid. (Bemerkungen zu den zytologischen Veränderungen nach Typhusimpfung.) L. T. E. v. Dragę.—p. 1559.

110 Magnesium and Aluminum Alloy for Sets of False Teeth. (Zahnersatzstücke aus Magnalium.) F. Schenk.—p. 1559.

111 *Syphilitic Aorta Disease. L. v. Korczynski.—p. 1561. Concluded.

112 J. F. W. Krimer, 1795-1834. (Zur medizinischen Kulturgeschichte. III.) I. Fischer.—p. 1564.

113 Vasomotor Paralysis and Allied Groups of Symptoms in Soldiers on Active Service. (Nervöse Kriegsdienstschädigungen. I.) O. Gross.—p. 1577.

106. **Reliability of Weil-Felix Reaction.**—Cancik writes from Prague that the Weil-Felix test gave positive findings in 90 per cent. of his cases of typhus in a recent epidemic. In many cases the titer rose from low to high during the course of the disease, while the findings were negative in other patients and in the healthy, or only faintly positive at 1:25. They were constantly negative in forty typhoid cases. On the other hand, the Widal reaction sometimes grew more pronounced in typhus patients who had had typhoid at some time or been vaccinated against it. (The Weil-Felix reaction was described in THE JOURNAL, Jan. 6, 1917, p. 55.)

107. **Roentgen Picture of Certain Form of Chronic Gastritis.**—Schwarz calls attention to the indented outline of the entire greater curvature of the stomach in a man of 35 who for years had suffered occasionally from severe gastric disturbances for which no cause could be detected. The prominences and inlets shown in the Roentgen picture were most pronounced in the lower part of the greater curvature outline, some of the indentations here being from 1.5 to 2.5 cm. deep, but they could be traced almost up to the cardia. The peristaltic waves did not modify this outline. The laparotomy showed the stomach apparently normal, with no external signs of an ulcer or tumor, but two minute healed ulcers were found in the duodenum, and gastro-enterostomy was done. The mucosa of the inner wall of the stomach was found swollen and hyperemic, thrown up into numerous thick folds which projected into the lumen of the stomach, thus explaining the indented line of the shadow. During the three years since this operation, Schwarz has encountered a number of similar cases, although none so extreme as the first. Dietlen described an analogous case in 1912, but he interpreted it as inoperable malignant disease, and was surprised to find the patient much improved by the end of a year without special treatment. He then assumed that perigastritic changes must have been responsible for the indented outline. Handek ascribed the indentations to traction from an assumed ulcer on the lesser curvature. Lengthwise folds in the stomach mucosa may be regarded as physiologic. Horizontal folds are evidence of a chronic gastritic process, probably induced by irritation from primary hyperacidity and hypersecretion. The conditions thus favor production of an ulcer, which may or may not be present with this "corrugating gastritis."

108. **Electric Palpation of the Abdomen.**—Kahane expatiates on the instructive findings with what he calls galvanopalpation of the abdomen. With a rheostat and galvanometer he seeks to determine the sensitiveness to a very weak galvanic current. He says that an electrode tapering to a point, connected with a 1 milliampere current, can be passed over normal tissues without their feeling it, but it irritates diseased tissues. They smart or burn under this galvanopalpation while the vessels dilate, the skin growing red in the area tested. He applies the point of the electrode by repeated tapping over a small area. The reaction weakens if the test is applied too long in one area. The area of the smarting or burning response to the electric current does not always coincide with the location of spontaneous pains or tenderness, but the vascular reaction accompanying it confirms the reliability of the information thus derived. For instance, if there is pain in the right iliac fossa but negative galvanopalpation findings, while there is a pronounced response to the galvanopalpation in the galliblader region, the probabilities are in favor of the latter's being the source of the trouble. Another advantage of the galvanopalpation is that the light touch of the electrode does not injure even acutely inflamed tissues below, when the palpating finger elicits severe pain. Among the points learned in the course of Kahane's experience with this electric examination of the abdomen, he mentions the constant positive findings in the right iliac fossa with spastic constipation, and in the left iliac fossa with atonic constipation. In a case of pathologic exaggeration of the gastroduodenal reflex, with diarrhea directly after eating, galvanopalpation revealed a hypersensitive area at the junction of the pylorus and duodenum. All other methods of examination gave a negative response. Nothing else will locate with such precision the pathôlogic area as this galvanopalpation, he reiterates, urging others to apply it just before operations and compare the findings with both. In the gastric crises of tabes, the stomach region gives negative findings, while positive findings are the rule in the region of the lower dorsal nerve roots. With one patient with attacks resembling tabetic gastric crises, but for which hysteria and enteroptosis proved to be responsible, no positive galvanopalpation findings could be elicited anywhere. Of course the reaction indicates merely irritation of the nerve terminals in the skin, but experience has demonstrated that this irritability of the nerve terminals corresponds to a pathologic process below.

109. **Eosinophilia After Antityphoid Vaccination.**—Draga rejects Labor's conclusions as to the eosinophilia he found in men who had been vaccinated against typhoid. Draga has found this eosinophil leukocytosis extremely frequent among his hospital patients, both military and civilian, representing different Balkan nations, and a few had been vaccinated against typhoid. He scarcely ever found helminths in the stools, but the necropsies revealed an astonishing prevalence of helminths in the body. He declares that nothing short of necropsy justifies an assertion of freedom from helminths.

111. **Syphilitic Aortitis.**—The preceding instalments of Korczynski's article were reviewed in these columns, page 233. He notes that the location of the mesaortitis seems to be of more moment than its extent. Even when the coronary vessels are suffering, this may be due directly to the syphilitic virus, without actual irreparable organic changes. Hence energetic treatment of the syphilis may induce wonderful improvement even when the patient seems doomed. He insists on repeating the course of treatment if the Wassermann reaction is still positive at its close.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 3, 1916, XXXVII, No. 97, pp. 1521-1536

114 Toxic Action of Asphyxiating Gases. (Contributo alla conoscenza dell'azione tossica dei gas velenose usati dagli Austro-Tedeschi.) G. Pisano.—p. 1521.

December 14, No. 100, pp. 1569-1584

115 *Obliteration of Varicose Veins by Injection of Iodin Solution. (Contributo alla cura chirurgica delle varici degli arti inferiori secondo il metodo Schiassi.) A. Franchini.—p. 1570.

116 Auto-Inoculation of Ulcus Molle. (Auto-inoculazione di ulceri molli alla regione pubica, per grattamento, in un ammalato, affetto da phthiriasis pubis.) C. Vignolo-Lutati.—p. 1574.

115. **Treatment of Varicose Veins.**—Franchini expatiates on the advantages of Schiassi's method of treating varicose veins by injecting into them 25 or 30 gm., to a maximum of 50 or 60 gm., of a solution of 1 gm. metallic iodin and 1.1 gm. potassium iodid in 100 c.c. distilled water. The injection is made slowly into the peripheral stump of the saphenous vein, about four fingerbreadths below where it joins the femoral vein. The patient stays in bed, with the limb raised a little, for two or three days. By the end of the week the saphenous vein is transformed into a hard cord. In two weeks he can get up, and can resume his ordinary occupation by the end of a month. The results were extremely gratifying in Franchini's eighteen cases.

Brazil-Medico, Rio de Janeiro

November 25, 1916, XXX, No. 48, pp. 377-384

117 Flagellate Parasites of Mammals in Argentina. (Sobre os flagellados parasitos dos mamiferos da Republica Argentina.) O. O. R. da Fonseca.—p. 377.

118 *Cure of Ulcerating Granuloma under Intravenous Injections of Tartrate of Antimony and Potassium. (Emeticotherapia endovenosa no granuloma ulceroso.) A. A. da Matta.—p. 378.

December 2, No. 49, pp. 385-392

119 *Study of the Biology of Species of the Schistosomum Mansoni. A. Lutz.—p. 385.

120 Nematods of the Cucullanus Genus. (Nota sobre cucullanidae nov. fam.) A. L. de B. Barreto.—p. 388.

December 9, No. 50, pp. 393-400

121 Mechanism of Humming Sound in the Arteries. (Do ruido de pião—tambem chamado de piorra, corropio, rodopio e berra-boi.) P. Valladares.—p. 393.

122 Antitoxin in Diphtheria. (Factos contradictorios sobre a sorotherapia antidiphterica.) O. Clark.—p. 394. To be continued.

118. **Treatment of Ulcerating Granuloma.**—In Da Matta's patient the granuloma had persisted for eight months. It was in the genital region and measured 3 by 5 cm.; a smaller ulcer had developed opposite on the thigh. It had only been aggravated by local measures, but marked improvement was noted after the third intravenous injection of tartrate of antimony and potassium, according to the usual technic, and both ulcers soon healed over. Eighteen injections were given in all in the course of thirty-four days.

119. **Evolution of the Schistosomum Mansoni.**—Lutz reports considerable research on this schistosomum, the results confirming Leiper's statements. He found that the larvae could hatch out from the ova many days after they had been expelled in the feces. Contact with water is required for the ova to hatch, and the larvae prefer to stay on the surface of the water. These three facts facilitate contagion. He experimented with five species of fresh water snails, striving to infect them with the schistosomum, but was able to succeed only with one species, the *Planorbis olivaceus Spix*, which is encountered mostly in northern Brazil. Infection occurs by way of the antennae, the changes in which show when infection is installed. Other flat and long snails attract the larvae and they invade the antennae but the evolution of the schistosomum does not proceed to completion in either of them. The *Schistosomum mansoni* requires heat for its development, its growth and proliferation being impeded or checked entirely by low temperatures.

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October 13, 1916, XXIII, No. 41, pp. 359-418

123 *Echinococcus Disease. (Equinococosis.) J. Llambias.—p. 359.

124 Influenza and Vaccine Treatment. (Algo acerca de una epidemia.) F. G. Alvarez.—p. 367.

125 *Genital Prolapse. (Tratamiento del prolapsus utero-vaginal.) E. A. Fox.—p. 370.

126 Placenta Previa: Etiology and Treatment. U. Fernandez.—p. 372.

123. **Echinococcus Disease.**—Llambias found the parasites in the liver in 113 of the 143 cases of echinococcus disease that he has examined after death. In 68 cases the liver seemed to be the only site, but in 11 cases the lung was also involved and in 34 cases other organs.

125. **Uterovaginal Prolapse.**—Fox's communication is based on 105 operative cases in the last five years. He aims to reenforce the perineum and make the genital hiatus narrower. The uterus is not removed unless for special indications, as this needlessly complicates the operation. Twelve of the women were left with incontinence of urine but this was corrected by anterior colporrhaphy or torsion of urethra.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

November 25, 1916, II, No. 22, pp. 1921-1984

127 Action of Radium Rays on the Heart Functioning. (Radiumbestraling en hartswerking.) H. Zwaardemaker, C. E. Benjamins and T. P. Feenstra.—p. 1923.

128 Presbyopic Asthenopia. W. Koster.—p. 1929.

129 Industrial Insurance and Accident Legislation in the Netherlands. (Over uitkeeringen door de rijksverzekeringsbank krachtens de ongevallenwet 1901, verleend in gevallen van ernstige verminking op jeugdigen leeftijd.) G. P. van Troojen.—p. 1932.

130 To Remove the Tonsils or Not? (Het vraagstuk der tonsillectomie.) P. J. Mink.—p. 1937.

Finska Läkaresällskapets Handlingar, Helsingfors

October, 1916, LVIII, No. 10, pp. 1471-1582

131 War Wounds of Lower Jaw and their Treatment. (Bidrag till behandlingen af skottskador i underkäken; tillika ett bidrag till förfärdigandet af provisoriska resektionsproteser för underkäken.) R. Faltin.—p. 1471.

132 Myxomatous Tumors. (Iakttagelser öfver strukturförhållanden i bindväf. II.) H. Eklöf.—p. 1505.

133 *Alcohol and Precision Work. (Alkohol och precisionsarbete.) U. Tötterman.—p. 1527.

134 Case of Chronic Actinomycotic Suppurating Mastitis. (Ett fall af kroniskt förlöpande, varig mastit, förorsakad af en cladotrixart.) F. Langenskiöld.—p. 1538.

135 Differential Count of the Leukocytes in the Counting Chamber. (Kan en leukosyttformel, baserad endast pa procenttal, gifva en rätt föreställning om blodets morfologiska sammansättning?) T. Sandelin.—p. 1552.

136 Accommodation in Comparative Ophthalmology. (Ogats ackommodation inof djurräckan.) V. Grönholm.—p. 1558.

133. **Alcohol and Effect on Needle-Threading Tests.**—Tötterman's research was conducted on himself, and the findings are tabulated over a period of forty-three days, two weeks free from alcohol alternating with two weeks under the influence of 100 c.c. of a 25 per cent. solution of alcohol taken each evening at 11 p. m. The test consisted in the attempt to thread as many needles as possible in a given time. This work was done at 10 a. m., thus eleven hours after the ingestion of the alcohol. He had 200 No. 6 needles stuck on a cushion where they could be easily picked up. The threads were No. 36 white thread, cut into 20 cm. lengths and laid over a board so that they hung down over the edge, a couple of rulers laid over the threads preventing tangling. As the needles were threaded he dropped them on a paper, and every fifth minute a new paper was drawn over the old one. For each test the ends of the threads were cut off fresh. Some charts show the falling off under the influence of the alcohol; for example, in one test the number of needles threaded dropped from 182 to 160 in the first period and from 185 to 158 in the second.

Hygiea, Stockholm

1916, LXXVIII, No. 23, pp. 1761-1808

137 *Tumors of the Carotid Gland. (Bidrag till kännedomen om karotiskörteltumörer.) P. Wetterdal.—p. 1761.

137. **Tumors of the Carotid Gland.**—Wetterdal's attention was attracted to this subject by two cases encountered, one in a man of 47, the other in a woman of 56. The tumors had been noticed for several months. The man's tumor had invaded the large vessels and he died after a second operation which became necessary within six months. The woman's tumor was removed without trouble. Wetterdal has found records of seventy-four cases in the literature but only sixty-three can stand analysis. These he tabulates, with details as to the size of the tumor, nature, outcome, etc. Both sexes are about equally represented in the statistics, and both sides. These tumors are generally benign and cause no symptoms, but a certain proportion display a malignant tendency and invade the vessels so that the mortality is about 25 per cent. It was 29 per cent. in the last series of fifty-nine operative cases.